Making and Living in a Post-Industrial Landscape / Time-space.

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Abstract

The project is a combination of practice as research based investigation, and material outcomes in the form of steel objects. The process of this research, which included travelling to the United States to interact with my contemporaries and the steel craft industry, highlighted for me the interconnectivity of three elements of making. These three elements articulate my experiences of practice as research, in a textual form, and add to the explanatory component of my project; they are:

Lineage: The passing on of knowledge and skills, the lineage from one maker to another. This is physically described in Dogon (Mali) mythology as passing a piece of iron from the blacksmith to the student's hammer through the generations. It is alternatively articulated through the increasing transmission of skills via online forums, video demonstration and social media.

Material/medium and process: Form development specific to the material, composition, problem solving and intuitive interaction; the conception of tools to manipulate and transform steel. This is about what can actually be done, but also about perception of the material because using steel means always working with the paradox of rigid and near fluid states.

The social implications of being a maker in the 21st century: In situating my work I am not set within a cottage industry, although the working of steel stems from a pre-industrial craft that developed into a large industry. The skills and techniques that I use are from both eras. Craft ideology and making are now a post-industrial endeavour. My practice is a hybrid: it embraces industrial skilling, yet is translated through a crafts and do-it-yourself approach.

The new work produced during this project is the research outcome, a physical interpretation of the knowledge and experience gained. It is also a continuation of the research through making, a thread in the larger fabric of practice. The objects made are complex compositions utilising a number of forged and fabricated forms. The objects have a level of ambiguous utility, inviting the viewer with an aspect of familiarity, and the potential for possible human interaction, freeing the objects of specific classification.

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Introduction

The project is a combination of practice as research based investigation, and material outcomes in the form of steel objects.

I make objects using industrial blacksmithing techniques, combining an education in contemporary art with extensive training and experience in trade skills.

The opening chapter, ‘Methodology’, pragmatically explains that the project has been an open-ended investigation, with a practice as research emphasis. For me, I am inside the process and cannot be removed from it. I see the objects as a chain of events, a series of moments, a narration between maker, material culture and time, a train of thought. The making of the work is not a means to an end, it is instead an ambient progression of discovery. This exegesis accordingly is a record of research, and a discussion of process and context. I do not try to explain the objects created, but rather explain the research that they are produced from, the making and maker context from which they come and to which they belong.

Chapter Two of this exegesis is a brief but necessary diversion into some of the histories and traditions of artist blacksmithing that have informed my practice. It is specifically included for the Australian context, where the use of forged steel outside of industry has been scarce.

This research commenced with spending time working in collaboration with an ironworking shop in Pittsburgh, Pennsylvania, USA, part of the ‘rust belt’ in which I grew up. I felt that working in an environment such as a steel town would help to further develop insight into my own existing histories and practice as an artist blacksmith. The environment that I was to be living and working in was post-industrial, but at the same time the workshop was a small artisan-run metalworkers studio. This combination held interest for me in regard to the social, material and skills based outcomes of making in an era after industrial decline.

While in North America further opportunities related to my medium and practice arose. Over the course of the project I visited the studios of 15 professional artist blacksmiths, and worked with five of them; I attended four major conferences; I worked in Pittsburgh, Pennsylvania, Milwaukee, Wisconsin, and Truckee, California; I toured abandoned steel mills; I completed an artist residency in the libraries, archives and workshops of the National Ornamental Metal Museum in Memphis; I installed an exhibition at Carbondale, Illinois; I visited and documented a number of prominent sites and institutions; and I spent a month as an intern at the Albert Paley studios in Rochester New York.

Throughout this time I made work and experimented with materials and techniques as well as participating in the day-to-day activities and more formal structures of the various studios and workshops. In this way I combined intellectual and practice research. Appendix A provides a detailed timeline of the project. It is strongly suggested that the reader of the exegesis reviews the timeline before beginning to read the paper, as it aids in mapping the journey of the development of my practice during the MFA Research project.

The experiences during the project were material and immediate, which gave me a first hand experiential broadening of my practice, as well as a window into the lives and practices of my contemporaries. The process of this research highlighted for me the interconnectivity of three elements of making which make up chapters three to five of this paper. These three elements are not discoveries, but they frame the research outcomes and articulate my experiences of practice as research in a textual form, while adding to the explanatory (exegesis) component of my project. They are:

Lineage: The passing on of knowledge and skills, the lineage from one maker to another. This is described in Dogon (Mali) mythology as physically passing a piece of iron from the blacksmith to the student's hammer through the generations. Alternatively, in contemporary Western terms, it is akin to articulation of knowledge through the increasing transmission of skills via online forums, video demonstration and social media.

Material/medium and process: Form development, which is specific to the material, and includes composition, problem solving and intuitive interaction. It also includes the

conception of tools, their design and evolution to perform their task in manipulating and transforming the steel. This is about what can actually be done, but also about perception of the material because working with steel means always working with the paradox of rigid and near fluid states.

The social implications of being a maker in the 21st century: In situating my work I am not set within a cottage industry, although the working of steel stems from a pre-industrial craft that developed into a mega-industry. The skills and techniques that I use are from both eras. Craft ideology and making are now post-industrial endeavours. My practice is hybrid, as it embraces industrial skill, yet is translated through a do-it-yourself approach.

The new work produced during this project is a research outcome, a physical interpretation of the knowledge and experience gained, and a continuation of the research through making. The objects made are complex sculptural compositions utilising a number of forged and fabricated forms. The major works have a level of ambiguous utility, inviting the viewer with an aspect of familiarity, and the potential for possible human interaction, while freeing the objects of specific classification. Their lineage in the artistic terms of the art academy is in some ways anchored in formalist sculpture, where the form is the primary concern; yet within this academic interpretation they also operate in the world of craft, and are complicated through the use of industrial design techniques and functional possibilities, so that the vernacular of process and material is clearly articulated and experienced.

Chapter 1: Methodology

My Masters research project gave me the opportunity to focus on and explore my arts practice. The research methodology that I use to define my project is practice as research, with a strong focus on what Carter (2004) terms as 'material engagement', as well as a practical and theoretical engagement with the broader socio-political implications of my arts practice and a look at the role of 'performativity' in object making. This chapter is a pragmatic explanation of the practice as research methodology as it applies to my project.

I decided that this methodological approach was best suited to the nature of my practice-based MFA and the way that my arts practice has developed over time, as well as the nature of my training as a trades and crafts person. It was imperative that the physical and tangible discoveries I made during the research project were considered as research outcomes in the same way that a conceptual outcome could be validated through text, or verbal explanation. It is important that this exegesis is understood as an explanatory and exploratory text about the project.

Throughout my undergraduate degree I had struggled with a perceived expectation that I needed to create or conceive a conceptual basis before making an object, as Sennett wrote in *The Craftsman* 'History has drawn fault lines dividing practice and theory, technique and expression, craftsman as artist, maker and user; modern society suffers from this historical inheritance,' (2009, p.11). It was not until my Honours year that I was able to immerse myself in an intuitive creative process, and to understand that much of my knowledge and ability as a maker was subconscious, physical and intuitive and that to explore that understanding and its possibilities could not be pre-figured. As Paul Carter states in his book *Material Thinking:*

> Creative knowledge cannot be abstracted from the loom that produced it. Inseparable from its process it resembles the art of the woof-thread through the warp. A pattern made of holes, its clarity is like air through a basket. Opportunistic, it opens roads (Carter 2004, p.1).

During this time my text based research, and conversations with other artists gave me a theoretical foundation for the validity of physical exploration, working, making, practice as research; and in my Honours paper I wrote:

> The meaning of the pieces I produce is, for me, inextricably entwined with process,

> material, physical engagement and technical ability. It is only through this open-ended activity that new works can emerge . . . My sculptures are not resolved static things; within each is a growth of understanding. One thing leads on to the next and this is how the original can be found (Mattila, 2010).

I began to understand that, for my practice, making is important, vital. Unlike those who design and build models, blueprints or design drawings, and then execute the work as a literal manifestation of these prototypes, for me the making/craft aspect of the work is integral to the creative process and outcome. Describing this in text is made complicated by the deeply intuitive and physical nature of the knowledge and skills gained through apprenticeship. I can hardly believe that I have not always had these skills. When I make original artwork it is through a process of research that is ongoing and continuous and includes both physical, temporal and textual exploration and investigation.

This dynamic is a continual thread throughout my experience and practice as a maker. The instruction of mentors (as discussed in Chapter Two) is important in this way; it is a personal experience, one person teaching another. With the new technical skill learned I begin to explore and experiment. I begin practicing, and researching more about what can be done with this material in an artistic sense. My investigation becomes broader and the research starts to become a set of new skills, which after continual practice become foundations for sculptural forms. This for me is the meshing of technical skill and artistic research.

My background as a maker is, like any artist, made up of various combinations of training, culture and landscape. One of the key aspects of my practice is that I am both a fully qualified metalworker (a boilermaker, welder and an industrial blacksmith), as well as a university art school graduate. Another key aspect is that coming from a DIY (Do It Yourself) punk rock background I have spent my time chasing up skills my own way, looking information up online, walking into workshops and asking advice, taking courses, and recycling scrap to build equipment. ‘DIY’ in this context relates to making and providing for yourself as a radical activism, both subverting and providing alternatives to dominant political paradigms which encourage and rely on passive consumerism in order to maintain legitimacy. The metalworking skills that I took to art school, and the lack of respect for formal knowledge hierarchies, informed my approach to making and research. It was when considering my Masters project that I realised some of the correlations between my training as an apprentice, my

background, and the practice as research approach. My Masters project would be an extension and exploration of these three interconnected aspects of my practice. I would travel to the USA, and visit every blacksmith workshop and studio I could. I would also go to conferences and events, and I would see what happened. Both alternatively and simultaneously, I see this as the journey of a recently apprenticed blacksmith, a result of 21st century DIY craft culture, and a natural consequence of the interconnectedness of the craft community. It has been all three of these things. The project has yielded outcomes for my practice that I had not even considered at its inception.

Chapter 2: Traditions

The following overview provides some information for the reader of this exegesis in order to situate my work within the context of a medium which has until recently been relatively unheard of in the Australian art context. It in no way situates my practice as a whole, but is provided to enable the reader to gain familiarity with the development of a particular material tradition that has influenced and informed my approach to materiality. It is important to note that I am uncomfortable with the idea of the artistic genius, as while the artists and artisans I mention contributed to their field significantly, they did so as products of their context and time, and did not exist in a vacuum. So I write this section reluctantly, aware that a context is needed, but cautious not to reaffirm stereotypical historical trajectories, or single out 'key figures'.

It should be noted here, for context, that I grew up in the US and have lived in Australia for a number of years, that my Head of Studio at art school had also spent time with prominent American blacksmiths, and that my research project was based in the USA. This has led to a distinctly North American bent in certain aspects of the history of my practice and research, especially the ones that relate to the material and sculptural tradition of artist blacksmithing, but also to social and cultural histories. This overview of artist blacksmithing is provided here to give context for the Australian reader where the historical use of forged steel has been largely industrial and agricultural (Cochrane 1992, p.380), with a few exceptions discussed further in this chapter.

In the European tradition artistic expression with the use of iron and steel has largely been through architectural ironwork. Railings, gates and related hardware have provided a platform for formed and shaped steel. Within each 'movement' in architecture, ironwork has played a major role reflecting the ideas, styles and technologies of the times. Artistic expression has existed in other aspects of the craft as well, in utilitarian objects such as cooking utensils, hand tools and weapons, but without the diversity of the architectural side of the practice. Turn of the century Art Nouveau/Art Deco smiths and designers, such as Allesandro Mazzucotelli (Italy) and Antonio Gaudi (Spain) are well known figures in the field. Among America's historical and most well known 'wrought iron' smiths were Samuel Yellin, who was originally from Galicia, Poland, but settled in Philadelphia, Pennsylvania, and Cyril Colnik, who while originally from Trieben, Austria, settled in Milwaukee, Wisconsin. Their work was all

functional ornamental, and particularly included gates, railings, and similar forms. As noted in the timeline in Appendix A, I have visited and studied this work extensively. The relevance of this work to me has been about deepening an understanding of what can be done with the material, rather than a study of composition.

Contemporary artist blacksmithing, as it refers to the use of the plastic nature of steel being employed in the modernist tradition of sculpture, had its clearest beginnings in Italy. These beginnings were highly influenced by the broader decorative arts movements of Art Nouveau in France, Belgium and Spain, and became manifest in the Art Deco ironwork of Italian master Muzocatelli (1867-1938). The first notable proponent in sculptural work to follow Muzocatelli was Italian master sculptor Toni Benetton (1910-1996) who explored monumental forms, and forms found only in the thermal plastic nature of steel. Benetton is known for his exploits of the plastic nature of the material, known in Italy as the style 'plasticità'.

Many other Europeans and Americans emerged at a similar time, focusing on sculpture. The majority of other early direct metal (not cast metal) sculptors such as Pablo Gargallo, Julio Gonzazalez, Pablo Picasso, Anthony Caro and David Smith explored the potentials of steel as a medium for producing sculpture, (Meilach 1999, pp.13-14). Although these direct metal sculptors used heat to shape and form the material, they had a larger focus on the additive (building up a sculpture by adding parts) and fabricated vocabularies. These processes have been the most widely used in direct metal sculpture since then. A brief description from Stephen Bondi outlines this:

> Through the works of such noted sculptors as Anthony Caro, Richard Serra and Mark Di Suvero steel has been firmly established as one of the primary sculptural mediums. In looking at this plethora of work, however, it would appear that in accomplishing this, most artists have stayed within the essentially additive and reductive process, and few have brought into play to any significant degree the oldest and most unique technique for working steel, the plasticity and malleability of material (Bondi 1998).

While the artists mentioned above and other iconic cast metal sculptors such as Giacometti or Henry Moore, as well as more contemporary artists working in steel, especially Richard Serra, could be linked into the tradition that informs my work, they are not nearly as significant in my practice as might be thought. I have looked much more to metal artists whose direct interest was in the qualities of the medium such as Albert Paley and Tom Joyce. Or from the same era the work of New York artist Lee Bontecou whose recent retrospective has received critical acclaim:

> In artistic terms, Bontecou's works also functioned as subversive replies to the sexual machismo and self-expression endemic to the predominately male Abstract Expressionists. On one hand, like Nevelson, Chamberlain, Rauschenberg, and Johns, she chose to subvert the highly individualized idioms of Abstract Expressionism by creating art from materials found in the studio and street. Her artistic process also articulated a shift away from heroic, signature gestures in favour of an obsessive, repetitive procedure that mimicked old-fashioned processes inherent to building boats or knitting sweaters (Chattopadhyay 2004).

Likewise the work of rubber artist Chakaia Booker is more influential to my practice than the work of the previously mentioned direct metal sculpture tradition. Chakiaia Booker, 'Like her sculptures . . . is a carefully assembled and richly layered individual who sees herself as a sculpture through her tasks of dressing, sewing, cooking, and other daily activities which she considers to be art forms in their own rights,' (Castro 2003). Her work, is described as calling 'attention to slavery, industrial revolution, working class, factory labor and even addresses the qualities of rubber.' (Wei 2002, p.88). Her approach resonates much more closely with my broader practice and relationship to life and context than the monumental sculptors in the modernist tradition.

In America, the craft of blacksmithing like other traditional mediums had a major renaissance during the Studio Craft movement of the 1970s. Many of these makers, including to name a few, Albert Paley, Russel Jaqua, Stephen Bondi and L Brent Kington, started out as jewellery and small metals students and teachers at universities who then became interested in blacksmithing processes. Other proponents of artist blacksmithing in the 1970s included those interested in the craft as a life or career choice, wanting to live lives with skill, such as Bob Bergman, Mike Bondi or Tom Joyce. All of these artists looked predominantly to a combination of the direct metal artists described in the preceding chapters as well as to the North American traditions of decorative ironwork. Some of them, such as Joyce and Jaqua, also researched and visited traditional smiths in Africa as well as visiting and participating in some form of Journeyman training in Europe. What is important to my project about this movement, is their explorations of material possibilities and their commitment to sharing and spreading knowledge. This contrasted significantly with the traditional guild systems of protection, and arguably kept the craft alive, as well as moving beyond the confines of decorative style manuals and traditions in form development. Instead these artists represent, for their time, a diversity of innovative approaches to traditional skills.

In 1970 Brent Kington set up the first workshop on blacksmithing at an art school, the Southern Illinois University (SIU), in Carbondale, Illinois. When I visited this facility in 2012, to help install the travelling exhibition of 'Iron 2010' and to spend time in the studio with current students, there was a thriving community of artists working in the medium of forged steel. Students and recent graduates such as Haley Woodward, Logan Hirsch and Patrick Quinn create work that while based in the material tradition of blacksmithing is connected to their contemporary context. Instead of the monumental or modernist forms of their predecessors these young artists' work is enthusiastically interested in the organic, the mechanical and the material. All three of these artists display, to me, an unpretentious relationship with medium and process, and a celebration of skill. The Carbondale undergraduate and post-graduate courses in metal smithing remain key to the continuation of skills and experimentation with the medium in an art school context.

In 1973 a group including L Brent Kington started an organisation called the Artist Blacksmiths Association of North America (ABANA), holding their first conference in Lumpkin, Georgia, in the same year (ABANA, 2013). The organisation became pivotal in the renaissance of the medium and the creation of forums for the transmission of skills from generation to generation. It also became important in the transference of the renaissance back across the Atlantic as well as throughout the world. The current surge today in Australian artist blacksmiths is linked to membership and access to publications from this organisation. I attended the ABANA conference in Rapid City South Dakota in 2012.

In Australia during the 1970s and 1980s, artisans such as Steven Weis and Daniel Jenkins attended American Artist Blacksmith Association (ABANA) conferences in the USA and made contact with practising American smiths (Cochrane 1992 p. 380). Partly inspired by this trans-pacific inspiration was a small but growing culture of Australian smithing with an emphasis on furniture. Amoung others this includes: Daniel Stevens (Qeensland), Daniel Jenkins (Victoria), Gerhard Emmerichs (Victoria), Wayne Hudson and David Hamilton (TAS). These last two, as mentors and teachers at the University of Tasmania, have been influential in my practice. The broader Australian artist blacksmith tradition however is less important to my practice than the Australian industrial blacksmithing culture in which I was apprenticed.

In 1979 James Wallace, an ex-student of Kington, founded the National Ornamental Metal Museum, where I completed a residency during my Masters project:

> The Metal Museum has become the center for metal arts - a place that actively promotes artists and their work and plays a vital role in the recognition and collection of metal work and the teaching of innovative practices. It is a place that serves an international community of artists and artisans creating work that is steadily building a strong following and important place within the contemporary art dialog (Metal Museum 2013).

There is no doubt that the Metal Museum is a unique and comprehensive repository of art metal history and knowledge; with huge material and textual archives and an almost inexhaustible supply of information, it provides a resource for those interested in artistic metalwork that is unmatched anywhere else in North America. I found much of the technical and historical data in this exegesis and many obscure and fascinating texts during my residency there. It also holds an impressive collection of artefacts, which catalogue the material history of North American metalwork. Furthermore the Metal Museum hosts a number of annual events as well as a program that incorporates artists in residence, employed metalworkers and apprentices. Events such as repair days where metalworkers from around North America gather to repair metal objects of every kind brought in by the public, pour iron, and share skills and work together, and the artist/metalworker/apprentice program, foster an atmosphere of collaborative discovery and innovation supported by a strong skills base.

The contemporary context of artist blacksmithing is that globally the numbers of practitioners, associations, events and teaching institutions have been growing since the nadir of blacksmithing in the industrialised world during the mid 20th century. This is evidenced in the surge of associations such as American Artist Blacksmiths Association (ABANA), British Artist Blacksmiths Association (BABA) and the Australian Artist Blacksmiths Association (ABA.) As well as a proliferation of artist blacksmith courses and qualifications at numerous craft schools and universities, for example the Hereford School of Rural Crafts, University of Wales (UK), Penland School of Crafts (USA) and Carbondale Metals Department at Southern Illinois University (SIU). Elsewhere, traditions of blacksmiths in many non-industrialised nations have remained active and largely unchanged for centuries, although in many nations the increase in the importation of cheap mass produced goods has recently begun to render these still active traditions obsolete, for example the traditional travelling blacksmiths of Bhutan and other Himalayan nations (see Dema 2006, Wangdi, 2011). Internet based forums,

video tutorials and other online teaching and knowledge sharing platforms have proliferated in the last ten years.

As a result of the widespread interest in forged steel as an artistic medium and its promotion by professional bodies and associations, it is common that art departments (especially in the USA) in universities, colleges and craft schools include forging equipment in their studios, and offer units and courses that focus on or include forging processes. However, more than ever the participants in these courses draw from a global community of artist and makers and move beyond the boundaries of 'Art' discourses:

> 'Art' itself has also become a professional field of experts and elites, who carefully police the borders of their practice. A significant part of the joy of craft, and online creativity, is of course that it does not rely on hierarchies of experts and elites to be validated, and does not depend on editors and gatekeepers for its circulation (Gauntlett 2011a, p. 218).

The demonstrations at the biannual conference of the Artist BIacksmiths Association of North America that I attended in South Dakota was representative of this broad and varied community, in both the diversity of works made and practices represented, as well as of the demonstrators themselves: The 90-year-old Scandinavian knife maker, the family of copper smiths from Mexico; the Bay Area architectural ironworker Jill Thurman; the expertise of a highly skilled group in their early teens from Alabama called 'The Young Smiths'; the old world precision and considered function of locksmith Tom Latane from the Order of Meticulous Metalsmiths; the sculptural work of Ellen Durkan and her filigree 'Iron Ladies' and her presentation of full scale design drawings; Italian Master Claudio Bottero's chunky organic sculptural objects, forged with a team of strikers, also with incredibly beautiful hand drawings at 1:1 scale.

This chapter has focused on the development of forged steel as an art form during the 20th and 21st centuries. It should be noted that the practice of ironwork stretches back to the Iron Age and was part of both the industrial age, and the Arts and Crafts movement, as well as integral to many cultures and material traditions. It is also important that this discussion is not taken as representative of a worldwide movement in artist blacksmithing, but as a portion of what has added to that worldwide material discourse. It is related closely to the sculptural tradition of forged steel and its extension into the art and craft school context in American culture, specifically with relevance to my practice, but with some diversions for contextual placement.

Chapter 3: Lineage

Introduction

As an artist blacksmith, a maker in the medium of forged and fabricated steel, what differs from my history to most others is that my industrial training came first, with background experiences ranging from heavy metal fabrication through to an apprenticeship with an ex-railroad industrial blacksmith. During this time I forged, formed, hardened and tempered tools for industry; I cut, welded and ground elements together. I also studied the motions and gestures of forging, how the motions of working in an ergonomic and efficient way are crucial to the practice, and how each of these gestures reflects in the steelwork produced; the way that an individual's way of working can be read within the finished object. I studied how steel works and I learned metallurgy. I learned how steel reacts differently in certain circumstances, for example the effects of heat-distortion in fabrication or the forging principles used to maintain strength and integrity. The metallurgical aspect provided me with insights into the material and knowledge of a variety of different steels and their properties as well as an understanding of the transformative process that takes place on a molecular level. So I began to understand steel in the way a tradesman does, in the sense of its structure and integrity. After time working in this industry I commenced my official art training and during my undergraduate study I also travelled to Sydney New South Wales to complete my trade certificate training at Ultimo TAFE. The two disciplines meshed and the forged and fabricated vocabulary from industry became a soundboard for elements to compose objects. The dynamics that this social, collaborative, communicated and shared material thinking entails, the transmission of craft between agents and through performance, is integral to what I do.

History and the tradition of apprenticeship

My initial goal for my MFA was to seek out and research first-hand experiences, including technical skill and form development, and to situate my understanding of the social implications of my medium and processes within a post-industrial landscape. Through these experiences I have realised the importance of understanding the chain of events that occur, such as, how we arrive somewhere, how we can do what we can

do. There is a direct line between Geoff White and Lindsay Cole, the people who taught me my trade, and the work that I make. This line extends also to the people that I, in turn, teach and who view my process. This line is a link of knowledge, of both metallurgical and physical skill, specific and definable as well as abstract and embodied:

> The smith's hammer was often made by his predecessor who, as traditional custom instructed, incorporated a small piece of his own hammer, which was made in the same manner from his teacher's hammer. This physical connection unites the present smith with the original ancestor who gave his hammer and fire to man. All metal objects forged with this tool emerge as a second generation of offspring, embodying mythic events, characters, and ideas. The first ancestral blacksmith in Dogon mythology (Mali, West Africa) brought with him to earth a piece of the sun in the form of incandescent iron, along with the tools and knowledge to forge it (Joyce 1998, p. 9).

The lineage of craft knowledge is like a coded language. This code enables a continuation of a material culture that stretches back millennia. In response to a podcast on the differences between independent ('indie') and fine crafts by Brian R Jones (a ceramicist) a commenter 'Ana' wrote: 'I may not have a lineage of fancy teachers, but knitting has been passed on from generation to generation' (Crafty Pod 2012). For me, this simple statement by an anonymous knitter demonstrates an important thread through the practices of makers. This broad and intergenerational, and often in contemporary society horizontally organised and globally dispersed, lineage of material culture, this web of connections, is what David Gauntlett, Professor of Media and Communications, University of Westminster UK, discusses in various online videos, podcasts and articles and in his 2011 book *Making is Connecting*. Gauntlett describes the act of making as a form of connecting, in three ways: because you have to connect things together (materials, ideas, or both) to make something new; because acts of creativity usually involve, at some point, a social dimension and connect us with other people; and because through making things and sharing them in the world, we increase our engagement and connection with our social and physical environments (Gauntlett 2011b). Gauntlett asserts that an involvement in making and connecting is key to creating alternatives to consumer oriented society, and he places contemporary online opportunities for creativity on a continuum with makers in real space throughout history and in relation to the theories of Ruskin and William Morris. These ideas are discussed further in Chapter Four.

For many makers the utilisation of online platforms for connecting, making and sharing is becoming an important part of material tradition. My work and practice would be completely different without a history of interaction with internet resources, networking and research. I could not have networked or contacted the diversity of people whom I visited in my project without email; I would not have known about events as easily, and I could not have looked up the work of artists of whom I was interested in as easily. However it is not the ability to access knowledge already sought that I want to discuss here, as that is just a given for my generation, in this country (Australia). It is the chance encounters and the breaking down of knowledge, aesthetic and social hierarchies that has so profoundly influenced mine, and countless other artists and crafts-peoples practice:

> From MySpace to YouTube and Google, the term 'web 2.0' is now used to describe a participatory culture which is transforming value systems, undermining notions of authority and power, and enabling new pathways for autonomous creativity and innovation (Draper, 2007).

Google image searches have no defined categories besides words. I can view the work of what have been considered the 'greatest artists of all time' next to the sketches of an 'amateur' in one click. Hierarchies of what have been defined in the past as 'capital A' Art are meshed with the everyday, the obscure, the self defined and the individually promoted. A highly democratic space has emerged where 'likes' and 'shares' and searches define content. This differs considerably from the 20th century doctrines of high 'Art':

> By mid-century, New York's Museum of Modern Art (MoMA) had institutionalized a powerful dogma: the history of art was to be understood as a singular march through a progression of evolving formal styles, its "cultural advancement" led by a European and American avant garde—mostly men who practiced either painting or sculpture. . . . excluding from its contemporary scope a multitude of concurrent practices, especially those of women, ethnic minorities, and artists from other parts of the world—particularly if they operated according to different sets of cultural values. It also dismissed age- old craft practices, refusing to acknowledge their currency in the contemporary art world. . . . MoMA's logic relegated such individuals and practices to 'the past' rather than recognizing them as viable, aesthetic actors responding to their present conditions—let alone potentially guiding future generations in fruitful ways (Mathews 2013).

For me the ability to sample and view work, to share knowledge and network horizontally, is profoundly influential in my work and my approach to practice and received knowledge.

Demonstration and performativity

A large portion of my work is performance in the sense of both a moment of action in making that has been rehearsed through training and practice, as well as in the craft tradition of making as a lineage passed on and renewed through demonstration. This section will explore this concept further. Sound, smell, visual motion, articulation of tools, creativity in motion and flux. During my apprenticeship making tools, I repetitively forged points and blade ends, thousands of ends, forged, ground, hardened and tempered. I learned how to move in the shop, the ergonomics of moving from fire to the mechanical hammer to the anvil. The placement of the tools I used was crucial to productive work, and to wear and tear on my body. I also took part in unusual jobs, different techniques, and different steels. The repetitive motions became an intuitive motion. After extensive technical knowledge and practice I found that techniques and hand skills learned become 'knowns' in the making process – things that are understood, intellectually and kinaesthetically. The way in which I work, the final forms and the compositions are the unknown, as I work intuitively with the material and the processes it involves. This is quite different from the maker working from a set design or blueprint. I wear the histories of my own personal investigations as well as industrial training, and these skills and experiences become embodied knowledge that is only recognised during practice.

In the course of my MFA, when involved with teams of artistic workers, I could see my own research being passed onto others, changing and influencing other's ideas of making, both trade based and artistic. I have trained apprentices who within a year have developed their own passion for artistic investigation. They have acquired skills that have changed their lives. Through these moments craft is working beyond the object, becoming instead a process; a performance of making for a public, as well as a performative, moment; combining body, learned knowledge and context; an opportunity of learning and a connection to a lineage of makers. This has happened through training apprentices, as well as from interactions with contemporaries and in a range of mediums (for example, numerous conferences and demonstrations I have attended and participated in, as well as the time I spent at Scathain in Milwaukee, Wisconsin; Redstar Ironworks in Pittsburgh, Pennsylvania; the Memphis Metal Museum, Memphis, Tennessee; the Paley Studios, Rochester, New York; Mountain Forge, Truckee, California; and Bondi Metal Design, Richmond California).

The journey of my MFA and the travels and encounters during this time have captured and spread knowledge. I have in the past year performed and demonstrated in a growing number of arenas, I have given pecha kucha presentations and lectures about my research to my contemporaries and I have demonstrated making at a number of events as well as taught groups of students. I have performed in public the actions that are typical of a day's work in the studio. These actions performed on a stage, at MoMa (the MONA market) or to crowds at the Tasmanian Craft Fair, become a spectacle for the public. I find it interesting how in a technological age, people making by hand so easily becomes a form of theatre:

> Craft is inextricably linked to performance. As a genre predicated upon process, it requires the doer or practitioner to undertake a series of tasks in the creation of an object regardless of its material composition. Historically, performance, in the form of demonstrations, served as a means by which craftspeople could share their practices and techniques with other artisans and the general public. . . . What if we step away from the concept of craft practice as demonstrative and into the dimension of craft practice as performance art, in which process is viewed as spectacle and workshops and collaborations function as participatory events in which the object is not just created but also used as an expressive element within a performance (Oliver 2010, p.11)?

The performance of practice is derived from the history of physically handling the material. The work I produce cannot achieve any adaptation without an understanding of what has been achieved before. The repetitive motions became an intuitive motion. Industrial training is not one of just technique, but also a certain way to undertake tasks. Richard Sennett says of craft workers that 'their's is practical activity, but their labour is not simply a means to another end. . . . the craftsman exemplifies the special human condition of being engaged' (Sennett, 2008, np). Each time you hone or practice a new technique it adds to a bank/or subconscious vocabulary and becomes a part of the material outcomes; you practice, practice, practice… then it just becomes part of your practice.

Conclusion

In practice, continuing to learn and develop skills has meant seeking out knowledge from contemporaries and influential mentors, as well as seeking information from diverse media sources, and participating in online forums and studying online videos and images. This diversity of sources is only possible through the proliferation of internet based sources, networks and forums. Due to current availability of information,

older more vertical and hierarchically organised forms of trade and craft knowledge transmission are changing. During my apprenticeship I was told with great emphasis, by TAFE trade instructor Lindsay Cole that 'what makes a good tradesperson is experience' (2009). What feeds the creative enquiring mind can become inherent knowledge. Midway through my MFA research, I wrote an article for the trade journal *The Anvil's Ring*, discussing the travels and what I had learnt. The concluding paragraph of the article titled 'Building My Own Journeyman Program' is also a fitting conclusion for this chapter:

> I know that I will carry the knowledge and experiences I have gained with me throughout my life as a maker. I also know that many of the skills I have learned are not the ones I set out to achieve. My understanding and intentions about what I do have changed in unexpected ways. This unpredictable, and open-ended learning experience is something I feel very privileged to have had the opportunity to undertake (Mattila 2012, p. 49).

Chapter 4: Material Medium and Process

Introduction

This chapter will explore the ways that the research project has informed aspects of process. It will discuss what it actually is to perform blacksmithing. Commencing with an introduction to the material properties of steel, it will then go on to discuss form development specific to the material, explain tool making and use, and the resulting intuitive interaction with the material. In focusing on what can physically be done, and why, this chapter will also discuss perceptions of the material, because working with forged steel means working with the paradox of rigid and near fluid states.

Material Properties

An exact date of the discovery of iron is unknown: 'Before he discovered it in the earth, man depended upon the fall of meteorites of almost pure iron. Frequently meteors were beaten into objects of worship, and occasionally small, loose pieces of hematite were made into symbols of good luck' (Grancsay 1966, p.19). Throughout time we have found methods to transform the iron oxide found on earth into usable iron, and then further transform it into steel.

Blacksmiths and ironworkers in diverse cultures added carbon to iron through working the material in the forge and over the anvil, folding the material and using charcoal and other carbon rich processes. Early examples of steel objects include knives, swords, ritual objects, and cooking and eating utensils:

> Steel is an alloy of iron and other elements, including carbon. . . . The following elements are always present in steel: carbon, manganese, phosphorus, sulfur, silicon, and traces of oxygen, nitrogen and aluminium. Alloying elements intentionally added to modify the characteristics of steel include: manganese, nickel, chromium, molybdenum, boron, titanium, vanadium and niobium (Ashby & Jones 1992).

While ancient steel is known to have been produced in India as early as 400 BC and possibly even earlier in China and North Africa, the beginnings of today's blast furnace steel making processes were first used in Germany in 1300 AD, using a waterwheel driven bellows. Following this it was the invention of the Bessemer process, a method of producing tonnes of steel in one batch, in 1856 by Henry Bessemer that initiated modern steel mass production. This was followed in 1881 by the electric arc steelmaking process invented by Siemans and in 1952 by the Basic Oxygen Steelmaking (BOS) system which was developed in Austria and is the predominant process used today (from technical notes received during my trade training at Sydney Ultimo TAFE). The ability to produce steel on a massive scale during the 1900s completely revolutionised architectural, engineering and structural properties of technological development at all scales. The high tensile strength of steel combined with its malleability and ability to be formed and poured into versatile shapes and span massive distances changed humanity's material relations with the world they inhabit.

During my research project I spent a number of months in Pittsburgh, Pennsylvania. Pittsburgh was at one time the largest industrial city in the world and its industrial wealth was largely due to the steel industry. The whole city is now a network of derelict and deserted factories and rail yards once dedicated to the production of this material on a massive scale. Raw iron ore was shipped from Gogebic County in Northern Michigan (which is where I was born) and from the Mesabi Iron Ranges in Minnesota, and coal was at first mined right around the city and then throughout the Appalachian Mountains. Pittsburgh itself is criss-crossed with bridges and rail lines that once carried raw materials and molten iron and steel from one part of the production process to another. Often the sun could not be seen during the daytime due to the industrial processing, and the city was nicknamed 'hell with the lid off'. It was also a melting pot for immigrants from all over the world who came to work in the steel mills. Nowadays the city is a mixture of derelict industry, iconic steel bridges and new developments. The latter pushing bike trails and community gardens through the increasing green space. I visited Carrie Furnaces in Rankin, Pennsylvania, a deserted steel mill on the outskirts of Pittsburgh. The massive structure contained enormous blast furnaces that have produced hundreds of thousands of tons of iron, and the scale of the structure got me thinking about how the material I use is produced. You can see the energy that it takes to make the material, as well as the environmental impacts. These massive hulks of industry spewed out fumes and chemicals that are still impacting the region. Tom

Joyce (b.1956), an artist blacksmith from Santa Fe, New Mexico, talks about the preciousness of the material, and I will discuss this in the next chapter. Visiting Carrie Furnaces gave me a clear insight into the transformation of iron into a usable material, the metamorphosis of earth into a material that has amazing tensile properties and can be formed. That stage is one of many available in the life of the material.

Iron and steel development has always come from a process of transformation, created in an environment of intense heat. The basic characteristics of the material inform the processes of working with it:

> Iron is different from most other materials (including bronze), in that it does not immediately go from a solid to a liquid at its melting point. H_2O is a solid (ice) at -1° C (31° F), and a liquid (water) at +1° C (33° F). Iron, by contrast, is definitely a solid at 800° F (427° C), but over the next 1,500° F (820° C) it becomes increasingly plastic and more 'taffy-like' as its temperature increases. This extreme temperature range of variable solidity is the fundamental material property upon which blacksmithing practice depends (Academic.ru 2013).

It is a thorough understanding of this malleability at heat, and the resulting potentialities for making work, that is the basis of the blacksmith trade. In my experience this blending of metallurgical knowledge and hands-on skill was highly developed in the Australian railroads in the last 150 years. Blacksmiths who worked for the railyards were highly knowledgeable and competent in this area. My industrial training in Sydney with Lindsay Cole (who worked at the largest rail facility in the southern hemisphere, the Eveleigh rail yards), and my apprenticeship with Geoff White (who worked for Queensland Rail) has been fundamental in my understanding of the medium. This industrial knowledge combines intellectual knowledge with physical action, in a way that cannot be separated. The blacksmith who works in this way is applying knowledge in the moment. This performative aspect of the forged steel process is a major thread throughout my work.

Lindsay Cole has explained the heat treatment process of steel to me as the three Ts: Time, Temperature, and Transformation. These basics of metallurgy give me a better understanding of the material and what is happening internally and externally while working. So I view the material not just as surface, but also as mass. This training also helps me to further understand alloy steels for their potentials in tool making to help

shape the material at hand. The following quote engages the dynamic between tooling and working for the blacksmith:

> Iron is not reduced to final form, nor is it beaten into it. Rather, it is heated to a point where it hovers at the edge of viscosity, and, in this state, well-directed hammer blows cause it to flow into whatever form a skilled smith wants. When a hammer sinks into this glowing metal, the metal moves out from under it literally in miniature waves, and the skill of smithing lies in controlling the hammer so well that these waves are pushed across an ever-changing iron surface with utter precision (McNaughton 1988, p.28).

This dynamic between tooling and practice is discussed further in section three of this chapter. For me a thorough and always expanding knowledge of the materiality of my medium is crucial to my practice. It helps me think about the material and practice in a holistic way.

Conversations with Albert Paley about Iron Form Development

During the research project I was able to visit the blacksmith and metal sculptor Albert Paley at his studio in Rochester New York. I was subsequently asked if I would like to undertake an internship at the studio. I took up the offer and completed an internship during my Masters research project in late 2011. During my initial conversation with Albert Paley he asked, 'Why did you come here?' and I explained that I was influenced by his work and that what influenced me the most was the use of the plastic nature of the material, with an emphasis on 'the paradox' of rigid and soft nature. An inspirational quote from Albert Paley in the mid 1980s describes working with steel in this manner:

> The acknowledgement and acceptance of the dichotomous nature of the materials that present opposite and seemingly contradictory states at the same time and at the same place – movement and stagnation, rigidity and plasticity – created a perceptual reality founded in change and alterability basic to the organic. The tools imprints, incisions, tears, twists, and burns record the evolutionary nature of process and form development. Movement basic to the organic, of which we are a part, visible in the steel becomes a foil to human gesture resulting in empathy and anticipation through this visible dialogue (Paley 1985, p.8-9).

In my conversation with him, I continued to explain how his description of steel as 'frozen motion' has stuck with me and has become a driving force in my own work. My interpretation of this description has been to see all steel in this way and it has altered my perception of the material. Paley then began to describe his creative process to me,

explaining that he had spent years forging every day, studying the forms drawn from the plastic nature of metal. This reminded me of the approach espoused by Samuel Yellin (1885-1940) who said, 'The very best way of working is to make sketches in the actual iron on the anvil and let them serve as the inspiration and character of the work contemplated'. He often called experimental work in steel 'sketches' and stated that 'in the heat of creation and under the spell of the hammer, the whole conception of a composition is often transformed' (Andrews 1992, p.72). Similarly, during my visit Paley described looking at the gestural lines in steel, and studying the forged aesthetic. This reminded me of Julius Schramm's description of form development:

> I often found that the intermediate form of the iron while forging was more beautiful than the described finished work, and thought later to develop such intermediate forms, which changed with almost every hammer blow, in ways different from the way originally planned. Even the irregularities that arise during forging, which at that time were not tolerated as inaccuracies, I regarded often as important stimulation to further thought, and from this thought have developed viable forms (Schramm 1995 p.70).

In a similar way as this 'development of viable forms' that Schramm describes, as a result of Paley's years of experience, the forms that he creates are now translated into paper drawings that use and adapt the forms created during the hot metal processes.

In his recent work, Paley takes from this 'forged aesthetic' and draws stylised (hybrid) forged shapes that are transferred into laser-cut plate. This adapted process is due to his ever-changing, evolving study of form development, as well as necessary increases in the efficiency of making work to the scale that Paley now constructs. The drawings on paper that Paley produces are rooted in the plastic nature of steel, and this is how his work evolves, finding new forms. Paley described to me that this is how he can keep ahead of the workers, saying 'I can forge 20 elements in one day, but I can draw 100 forms in one day' (Paley in conversation 2011). Paley explained that he did not draw (on paper) at all for years, that he just forged because he wanted the steel to do the drawing. He explained that every experience leaves new forms and evolves. Another part of the form development process in the Paley Studio was the construction of models. He showed me around the design studio where there were numerous models at a progression of scales and of varying degrees of completion and refinement.

Paley also introduced me to some glasswork he had been experimenting with utilising a forging technique called upsetting. This technique involves pushing the material back into itself making a larger diameter in one section of the parent material. These samples were about 20 centimetres diameter round section, and upset to about 40 centimetres on one end. Using this example he showed me how a process equals a particular form; on understanding that form, we can place another element in between the two upset ends, and arrive at a new form that has developed from one basic technique. He showed that we can then further evolve these forms from different shapes placed in-between these upset ends, cones, cylinders, or anything else. Our conversation continued about iron-form development. This dialogue solidified my own understandings of finding form and understanding process, and felt like it filled in a blank.

Historically other artist blacksmiths have also studied the material in the way described by Paley. The generation of blacksmiths that established the 1970s renaissance of blacksmithing in the USA, including Paley, were themselves trained, inspired and apprenticed to the generations of master blacksmiths before them, such as Francis Whitaker, Samuel Yellin and Cyril Colnik, smiths who drew on influences from the Arts and Crafts movement in Europe. In the foreword of the catalogue of a recent seminal exhibition of forged work, *Iron, Forged, Tempered and Quenched* (2010) at the Houston Centre for Contemporary Craft, curator Anna Fariello explains that 'if Whitaker established a bond with the past it was Albert Paley who forged the bridge to the future' (2010 p.6).

Tooling a Catalyst for Change

In blacksmithing alloy steels are forged, ground, hardened and tempered to make an array of hand and handled tools: hammers, tongs, punches and jigs to move the material in its plastic state; they are an extension of the hand. They are also the tools to make other tools through a steel-on-steel process of cutting surface, extending leverage, clamping mass, moving mass. They are in a way the fingerprints of actions and ideas. They are the catalyst for concept, bringing about change and form. Tooling

opens doors to imagination and further creativity, they are the link between my hand and my work. The following quote from Barbara Bolt addresses this experience:

> In *Being and Time* (1966) Martin Heidegger sets out to examine the particular form of knowledge that arises from our handling of materials and processes. Heidegger argues that we do not come to 'know' the world theoretically through contemplative knowledge in the first instance. Rather, we come to know the world theoretically only after we have come to know it through handling. Thus the new can be seen to emerge in the involvement with materials, methods, tools and ideas of practice. It is not just the representation of an already formed idea nor is it achieved through conscious attempts to be original. (Bolt in Barrett & Bolt, 2010, p30)

Exploring the skateboard as an extension of the body in *Skateboarding, Space and the City: Architecture and the Body*, Borden (2006 p.100) explains, 'Within the act of these skateboarding moves, the skateboard is less a piece of equipment and takes on more of the character of a prosthetic device, an extension of the body as a fifth limb, absorbed into and diffused inside the body-terrain encounter'. Once the body has learned, it can move on to more complex situations. Risatti noted something similar in regard to tools when he wrote that 'when a tool is functioning, when it is being put to "work", energy and object come together as motion geared to practical, instrumental purpose' (Risatti 2007, p.43). For me the conception of tools combines with the physical, intuitive motions of learnt skill to create the physical reality. Mind and body in motion correlate and the objects made are the material outcome of this moment. During this action I find that a 'train of thought' begins to search for further potentials that lead into tools, forms, joints, and to an initial understanding of the relationships that all these might have in a composition.

This process is also undertaken in the opposite direction. As a blacksmith you are an architect of tools, while on one hand the design of known tools allows for the creation of known forms, just as importantly on the other hand experimentation with new tools allows for the creation of new forms. I was fortunate enough during my research trip to receive instruction on the bronze forging process in the Bondi studio in Richmond, California; the team at this studio are masters in this process. During this residency I was able to experiment with a material new to me, using tooling and equipment that I was familiar with. In a conversation with Mike Bondi, I said that I felt like the forms I was making were all the same, I had made them all before, and he pointed out the tools I was using. His observation explains a critical part of being a blacksmith, of using this medium. A ceramicist can pick their medium up, throw it at the floor, mix it with

water and pour it, form it with their bare hands. For a blacksmith the key to making is tooling, as you can't handle your material directly, and even when cold it is immovable with bare hands. Samuel Yellin (1885-1940) ran a shop of 250 blacksmiths in Philadelphia and there is still a lot of his ironwork in Pittsburgh; during my time there I came across it regularly. While at Red Star Ironworks I was asked to work out how to replicate the forms of a Yellin work, and what I found was that the only way it was possible to build these forms was to conceive of a new set of tooling, because the invention of the tools cracks the code of the form.

It is important to note that I use an array of different tools, not just hand tools. I use mechanical hammers, pneumatic hammers and electric welders; all of this equipment has its own vocabulary, which is entwined within its function, and I have studied these vocabularies just as much as the traditional hand forged languages. Lee Tribe, a sculptor from New York who also has a combination industrial and fine art background, explains the way that welding and heating processes inform his work:

> As the growing form suggests it is near completion, I begin to merge the many disparate elements with welds, which, then, themselves, become a fundamental aspect of the material of the sculpture. Some of the pieces used are heated and formed and thrown into the heap of possible parts to lend variety and expression. Cut plates are heated, dished, and assembled to become hollow pod-like shapes, which the body of the sculpture may emerge from or enter into. The craft of working the material finds its place as an essential part of the whole (Tribe in Iron: Forged Tempered and Quenched 2010, p47).

The growing availability of high-tech tooling and processes is also changing the way that I perceive the material and approach my practice. For example, just as a gas axe provides a certain edge, a laser cut panel can provide another.

Understanding blacksmithing tools and how they are made is an important aspect of this art and trade. They are like keys to locks, sometimes to locks I never knew existed. The tools are part of the conception of form. They themselves are forged, and manipulated to suit a specific job.

Train of thought, in the heat of practice

The processes discussed in this chapter enhance my skills and change my understanding of the forms and composition. I wear the histories of my own personal investigations as well as industrial training, and these skills and experiences become embodied knowledge that is only recognised during practice: 'In the heat of practice the body has the potential to become language and the work may take on a life of its own, however nothing can guarantee such visual performativity, or predict it in advance' (Bolt 2004, p.184). The following excerpt from my Honours work in context paper explains my experience of making and using tools: 'The doing, making, and thinking process is a haptic experience utilising and training body and mind forming, kinesthetic sensitivity. The hand becomes one with the extension of tools. Much like playing an instrument, or riding a skateboard and once the body has learned, it can move on to more complex situations' (Mattila, 2010).

When I work I make parts or elements, I make a series of forgings, thinking through the materials, and studying while I make. I am on a journey of learning and exploration: 'What was art to me or was not some time ago', Josef Albers said in 1944, 'might have lost that value, or gained it. . . . Thus art is not an object, but experience' (Adamson 2007, p.86). During these moments of making I set aside technical conditioning, not looking for craft perfection, but rather the unknown; my intent is collaborative, in that I am not trying to force the material into a totally specific shape, instead I work with its own characteristics and heat, relying on my intuitive skills. I do not try to triumph over and dominate the material into my ideas, but rather embrace the diversity of possibilities. I follow line and outline the marks, I layer and stack, fold and cut, and the movements are captured in time. This process is done in steel; Peter Lambert at Redstar Ironworks in Pittsburgh said when I was there that 'a weld is a perfect record of time it captures the position and breath of the operator' (in conversation 2011). As mentioned earlier Albert Paley also often talks about forged objects as frozen motion. The outcome of this stage of making, where I am very much immersed in the heat of practice is an assortment of parts and elements. The next stage in my making is that I begin to study and find relationships and dualities among these elements. I compose the parts bringing an intuitive order and structure to the making. However, this phase of the making is reliant on the preceding intuitive period.

Conclusion

Fundamentally metalwork takes technical skill, and in the heat of practice, a need for quick decision making because the working of iron/steel while hot allows only a small window of time to actually move the material. This window in turn gives a basic insight into the actual material characteristics, and the process of manipulating it, and this is the world of steel form. In my practice, individual elements are made in this process, and are then composed into a final work. Lee Tribe, a NYC sculptor previously apprenticed at the London docks as a blacksmith and boilermaker, explains that; 'The craft of working the material finds its place as an essential part of the whole' (2010 p.47).

The visual and structural elements of my work are very much dictated by the medium, the techniques, and the tooling, meshed with my creative process. Each of these aspects are considered at every move, and in the conception of each element, forming a woven composition in steel. Over the course of my research I set out to gain a deeper understanding of practice through further investigations of these crucial elements in the work, as well as through understandings of how other makers mesh these aspects with their own creative process.

Chapter 5: Social Implications

Introduction

An inherent part of my practice is an underlying engagement with the social implications of being a maker in the 21st century. My practice is hybrid, it embraces industrial skill, yet is translated through a radical do-it-yourself approach. Making has implications of empowerment and responsibility. The processes I use are partially derived from ancient traditions, and partially rely on highly technological materials and techniques. The use of these processes and materials are choices that I consider ethical, and to come with responsibility inherent with the skills of a maker. In *The Nyama of the Blacksmith, The Metaphysical Significance of Metallurgy in Africa*, Dona Richards explains: 'The more we become involved in the process, the more heightened become our powers of perception. We reach greater understanding of the symbolic statements presented in ordinary life; the profane becomes evidence of the sacred' (Richards 1981, p. 221).

This chapter explores the complex dynamic between the individual and the social; the interrelationships between me as a maker, in my studio, and the social and environmental connotations, opportunities and responsibilities of what I do. It maintains an exploratory emphasis, engaging with the physicality and context of my project and situating my practice in a broader ethical conversation and exploration of what it is to live and be in the world, and our relationship to materiality and society. This chapter will also delve into my own histories, and landscapes, as well as a collective industrial past, which is also a removed industrial present; everything I describe as history is current in other parts of the world. The underlying philosophy of this approach is explained well by the feminist maxim 'the personal is political', political in this instance used in 'the broad sense of the word as having to do with power relationships, not the narrow sense of electoral politics' (Hanisch 2006). My background in grassroots social and environmental activism and punk-rock ideology underpins this approach. For me punk rock ideology is related to a tradition that involves: radical self-reliance; a continual questioning of social structures and political hierarchies; seeks to challenge these from a grass roots level; includes an anarchist consciousness about how as individuals our actions are related to a whole, through the food and other consumables we buy, the

way we interact with each other; and the values and respect we show for others, and the environment, holding these above monetary or capitalist ideals.

Common histories: Industrial landscapes

My project began by exploring the contextual placement of my arts practice and where it has come from, especially its emergence and development from a number of post-industrial sites. My own childhood was in derelict mining areas and ports, and my training with redundant railroad smiths, people whose workplaces were formerly the pride of industrial Australia.

I was born in the 1980s in an ex-iron ore mining town, Bessemer, Michigan, USA. A fairly typical north-country mining town, it had experienced both boom and bust and was in steady decline by the time I was born. The Bob Dylan song *North Country Blues* was about a town like Bessemer. As a child my family moved to Duluth, Minnesota, which along with Superior, Wisconsin, across the bridge, were once the largest inland ports in North America. Massive amounts of raw materials such as iron ore, other minerals and timber were shipped from these ports to fuel the industrial cities that edged the great lakes: Detroit, Chicago, Cleveland, Buffalo, Gary and so on. Like much of the American urban landscape in the late 1980s and early to mid 1990s, while some of the industrial infrastructure remained in use, the towns of Duluth and Superior were littered with the remnants of a near past based in the transport and production of goods. Massive unused industrial structures formed the horizon. As a teenager I jumped freight trains all over the USA. The train lines weaved through the old industrial towns and ports, train towns and remote loading docks. They provided an insight into the behind-the-scenes of American cities and towns: loading docks, factories, scrap yards and backyards. The endless rails, expansive bridges and long tunnels themselves showed the efficacy of the transport network itself. When I moved to Tasmania at 21 years of age, my apprenticeship was undertaken with an industrially trained ex-railroad blacksmith in an asbestos-roofed, sawtooth workshop by the docks. My art school training was in the refurbished railroad shops of the Inveresk campus, alongside the preserved industrial blacksmiths shops of the Queen Victoria Museum and Art Gallery (QVMAG). I have used these blacksmith's shops for the creation of some of the objects and tools presented in this project.

For part of this Masters degree I worked in the ‘rust belt’ in the USA. Geographically the ‘rust belt’ spans from northern Minnesota through Michigan, Ohio, western Pennsylvania and ends around Syracuse, New York. This area of land lays in between massive coal deposits to the southeast in the Virginias and a seemingly endless amount of iron ore to the north. These materials combine to achieve iron and steel. The area, now nicknamed the ‘rust belt’, was a place in the world that my medium was made and manipulated on a massive scale, to supply steel products to the world, such as cars, structural steel, rails, trains, boats and guns.

The rust belt was not the only site of iron production in the US. During the residency that I completed as part of my Masters, at the National Ornamental Metal Museum in Memphis, Tennessee, I was introduced to a place called Sloss, located in Birmingham, Alabama. This site epitomises industrial America. It is of particular interest because, now a heritage site, it is used as a functioning arts space, housing iron artists as well as developing programs to educate the public about the site, and the processes involved in shaping iron and steel. The following outlines a brief history of the Sloss site. The city of Birmingham was founded on the fact that every ingredient (limestone, coal and iron ore) necessary for the production of iron was within a 30 mile radius (Utz 2009, p7). The city was founded in 1871 by a group including James Withers Sloss, with the plan to exploit the resources available. In *The Most Segregated City in America: City Planning and Civil Rights in Birmingham, 1920–1980*, the authors explain that Birmingham was planned as a place where cheap, non-unionised, and African-American labour from rural Alabama could be employed in the city's steel mills and blast furnaces, giving it a competitive advantage over industrial cities in the midwest and northeast (Connerly 2005, p.14).

There followed a period of massive industrial growth, and settlement, coupled with equally massive environmental degradation and exploitation of workers. Iron production at Sloss boomed in the mid 1900s and Sloss had a 100-year run before its time was up in 1971. The furnaces were initially run on such a hierarchical racial basis: that all white workers were on the top, with managers, engineers, and chemists, and at the bottom was a driving force of African American workers (Utz 2009, p.9). The Pittsburgh steel mills were also run on an extremely segregated, racist basis, documented in the 1997 film *Struggles In Steel* (Buba 1996) in which:

> The interviews with black steelworkers make up the major part of the documentary. Many of the workers, now elderly, remember years, decades even, of humiliation during their early years in mills like US Steel in Pittsburgh and Birmingham, and Bethlehem Steel outside Baltimore (Barry n.d.).

Sloss was a place where hundreds of ironworkers were exposed to the whims of industry tycoons and treated as disposable tools. The steel labour force during the 1940s through to the 1960s was dominantly African-American, and these workers were denied skilled positions. According to Utz their status in the industry was also reflected in their life and living quarters outside of the plant. Sloss is notorious as an example of an industrial hell for the underprivileged. The steel industry pulled minerals out of the earth and replaced them with pollution. The workers in the plants, mines and transport systems themselves dealt with modern slavery, and often paid with their lives. The workers poured out hundreds of tons of pig iron, with little reward. These histories have parallels in current-day China, and other industrial areas. Despite this horrific past, it is an integral part of the history of the city and after it closed many of the ex-workers identified with the place: 'A lot more than iron flowed from those furnaces. Our whole culture did. Our way of life' (Utz 2009, p.10).

These post-industrial cities and the rust belt now have a vast crumbling infrastructure. Millions of people also have a family history of immigration that is tied up with these industries and these areas. Thirty years of declining industry has emptied entire neighbourhoods of inhabitants, and/or livelihoods. In many cases those who could leave, have. In the case of cities like Milwaukee, Cleveland, Buffalo, Pittsburgh and especially Detroit, populations and standards of living have plummeted. The legacy of industry has been a severely degraded and polluted environment, and large swathes of the population with skills that are now obsolete.

Pittsburgh, where I was based for much of my project, was the largest industrial city in the world, and the biggest steel manufacturer. As discussed in detail in the preceding chapter, there were 64 steel mills, and the city was notoriously described as 'hell with the lid off' by (by James Parton, a Boston writer in 1868). There were times when the smog was so thick that midday was blacked out and the streetlights were on. As little as 30 years ago office-workers carried a spare shirt to work because the one they were wearing would be filthy from the commute. It was in this industry-filled valley that Rachel Carson wrote the seminal text *Silent Spring*, which kick-started the modern environmental movement. After the mills, factories, mines and workshops closed in the

1980s the city experienced unprecedented decline, and has since been in the process of reinventing itself. Empty shells of factories and buildings, vacant lots and deserted houses proliferated and there are still many parts of the city that have returned to weeds, or are half derelict. The now unused industrial infrastructure decays back into the environment, and is criss-crossed with bike paths and walking tracks as the city is regenerating. Vacant lots in the summertime become fields of sunflowers, planted in a somewhat hopeless effort to help remove heavy metals from the ground, and community gardens and urban farms fill the spaces in between houses. The neighbourhood I lived and worked in while at Red Star Ironworks (a custom ironworking business that houses metal-working artists, carving out a business that utilises industrial knowledge and embraces a DIY approach) had a community library project as well as community gardens and orchards. These in-between spaces, the shells and remains of a dead time, also became the canvas for the artwork of graffiti artists and guerilla public artists like the well known Swoon, aka Caledonia Dance Curry, and the Pittsburgh Industrial Arts Co-op. The organisers of a TEDx presentation by Swoon explain that:

> Although her aesthetics can be seen as an outgrowth of street art, her engagement with ethical living and making art share a close kinship with the idealism of off-grid, barter-based cultures and economies based on sharing. She uses scavenged and local materials and embraces print media as a potent means of action for social change (TEDx 2010).

Swoon's work emerged from the streets of Pittsburgh, and has had worldwide influence. Her work could be seen on the Penn Avenue 'arts' corridor, a street with numerous DIY studios, and artisan businesses, small-scale theatres and craft studios, and the site of the Red Star Ironworks original workshops. In 1997, inside the abandoned Carrie furnace steel mill (discussed in Chapter Four) a group of young artists, some of whom now make up the Pittsburgh Industrial Arts Co-op (IAC), spent a year constructing a 13-metre steel deer's head, antlers intertwined with the rusting pipes and channels of the structure. Media artist Sharon Brown, who is preparing a documentary on the construction of the deer and other site-specific, salvaged art in Pittsburgh, explains that:

> Hiking covertly each weekend onto the guarded site, carrying backpacks of hand tools and food, they extracted site materials, built jigs, designed assembly lines and struggled with engineering issues despite cold, rain and snow. The Deer's physical processes mirrored the mill's mechanical production methods as the artists' dogged determination echoed the millworkers to achieve personal goals beyond those gruelling workdays, difficult conditions and hard labor (Brown, 2012).

One of the artists involved in the construction of the deer worked at Red Star when I was there. He was a third-generation ironworker. Regarding this work, I quote the words of another Red Star employee, artist Alexi Morrissey, who in a TEDx talk in Pittsburgh said: ‘The codes of contemporary art are in the context in which it is made’ (Morrissey 2009).

In Milwaukee I worked at Scathain, a custom design shop basing itself on a 1940s machine shop aesthetic. The shop was split into three levels, a wood shop, a metal shop and a mirror-making studio. Located in the ex-industrial area of Milwaukee, Wisconsin, adjacent to the docks. Like Penn Avenue in Pittsburgh this was another area being reinvented as an arts corridor. The team of artisans who work at Scathain all have diverse backgrounds in sculpture, art and public art. Scathain itself is a commercial venture, and owner and craftsman John McWilliams experiments with both custom and production design, with an interest in a mixture of artisan and outsourced production. Using innovation in design processes and working with recycled materials and mixed media, the shop is run with a respect for the skills of the employees, and a grass-roots approach to making. This eclectic business model is one of the diversity of ways in which contemporary makers are making a living.

My project started as hands-on investigation about living with skill in the post-industrial world. I was interested in how myself, and others, make a living and survive/thrive as makers. The landscapes described are analogous to broader post-industrial realities, as well as being key to investigation of my medium and processes and their ethical and environmental connotations. During my project I worked in both Pittsburgh and Milwaukee in workshops and studios where artisans and designers were seeking to live lives with skill and creativity, and negotiating broader economic structures that in many ways are antithetical to their approaches. There are two aspects of this: artists as activists engaging the surface of the city like Swoon, or occupying space like the Pittsburgh Industrial Arts Co-op; or as artists running businesses that challenge, and create alternatives to, mass production. Both are ways that contemporary makers engage with common histories and industrial landscapes.

Ethics and material

At the beginning of the 21st century, human beings, living in a post-industrial consumer society (a late-modern society that is organized largely around consumption rather than production, with the majority of production now removed to other parts of the globe, as discussed in the preceding section), affect the world around them in ways that in the past would have been unimaginable. Ecological crises are becoming everyday occurrences and, while millions of people cannot procure the resources to feed or shelter themselves, millions of others waste and over-use non-renewable resources. Furthermore those of us living in late stage consumer capitalist societies lead everyday lives that reflect a position of global privilege and a ratio of goods and resource consumption that is out of balance with the physical capabilities of the planet. As makers of objects, artists/designers/ craftspeople are very literally positioned to engage and challenge material use patterns and products. Increasingly makers are incorporating these considerations into their practices (Mathews 2010, pp.140-54):

> We often deny responsibilities and evade duties; we ignore the obvious and disdain the subtle; we cite powerlessness or insignificance to justify our lack of involvement in the exercise of what is right and wrong. We forget that context is crucial, that once-trivial things now loom large, that we hold the key to the survival of much that is important. We have responsibility to try to make a difference, if only by gesture. Gestures turn insignificance into power. They change the worthless to the precious. This is important because we make precious things. As artists, we have a feebler excuse than most for avoiding important gestures, because what we do depends on understanding, deep down, the meanings, implications and truths of what we make. We must understand not only what we intend our work to mean, but what baggage and burdens our work takes on because of the context of our world (Lewis 1989, p.6).

I am an artist blacksmith, a maker using the medium of forged and fabricated steel. I have industrial training, heavy metal fabrication through to an apprenticeship with an ex-railroad industrial blacksmith. I forged, formed, hardened and tempered tools for industry. In my practice, I feel that it is my responsibility to engage and act on the broader implications of these techniques.

Craft activist and small metals blacksmith Gabriel Craig places contemporary interest in ethical craft production in the tradition of the Arts and Crafts movement (Cooke 2007). Further he says that during the industrial revolution the emphasis on ethical production of craft was centered on the treatment and conditions of makers. He continues to say that in contemporary studio craft culture, the makers who work for themselves are meeting the requirements of ethically sourced labour. However the emphasis has shifted, in the contemporary discourse on ethics in craft, to the

procurement of materials and the use of fuels. As Craig explains: ‘The initial production of jewellery is dirty, but the aftermarket is a place where recycling and enduring value is the norm’ (Craig 2009, p. 34). While Craig is speaking more pointedly about precious metals and gems, and the horrifically polluting processes of the goldmining industry his statement rings true for iron and steel as well, especially in the way that recycling and enduring value is the norm. Steel is one of the most readily recycled products, and generally a piece of ‘new’ steel has been recycled, melted down and reformed numerous times: ‘Steel is theoretically 100% recyclable: If recovered at the end of each use phase, the life cycle of steel is potentially endless’ (Steel Stewardship Forum, 2013 Material information sheet). However, what industry information often fails to mention is that vast amounts of energy are needed for the recycling process and for transportation, and that the processes produce massive air, soil and water pollution. Just because it is recycled does not mean it is free of environmental impact. In my practice, taking into account these direct environmental impacts is important. In my early practice I used charcoal as fuel, I gathered the charcoal left behind from Tasmania’s clear-felled and then burned forests to heat the scrap and reclaimed steel that I used. These early experiments were the beginning of exploring a physical reality expressed in the old saying of ‘turning swords into plough-shares’. I still consider these potential meanings every time I handle the material, because steel has so many past lives and potential futures.

Beyond simple material use I am also interested in the more reflective and personally interpreted ethics of materials. Tom Joyce, an artist blacksmith from Santa Fe, New Mexico, investigates potential meaning beyond the appearance of a work, and explores the essence of making and material use (Padilla 2006). He states: ‘I wanted to think about using iron as though it were something precious. I was thinking about how I can make each project matter, how to make something that is needed in the community’ (Koplos & Metcalf 2010, p.464). Joyce’s writing has helped me consider the ethical considerations of material practice, beyond just material use and environmental footprint; to consider what I make and its possibilities. What I make matters, how I make it matters, and what I make it from matters. During my Masters project I obtained a 50-calibre gun barrel from a p-51 Mustang fighter aircraft. A client in Milwaukee had wanted a table built from the parts of this aircraft, so I asked if I could have the leftover barrel. I wanted to transform this instrument made for killing into something useful. I cut a section off the gun and forged a series of centre-punches for everyone in the shop.

In this way the piece of steel became a tool to make all the holes to form artisan work. I used the punch to mark all the holes to be punched or drilled in my Masters work. I think about the history of this material whenever I mark out the position to make a new hole, and how the skills that I have developed and the objects I choose to make carry an inherent responsibility. The following quote, taken from a book by Joyce about West African Mande blacksmith traditions, engages with this:

> As surely as the hoe can cultivate the land, it can with equal efficiency lead to the depletion of it. As surely as the knife can harvest the crops, it can be used to maim or kill. The duality of creation and destruction inherent in these objects applies to the smith as well. Both the blacksmith and the material he [sic] works control the power of either form of expression (Joyce 1998, p.9).

Some other ways in which I respond to the ethics of materials in the workshop include the materials I use as well as the way that I use them. There is close to no waste in the workshop. I try to utilise every scrap of the material. In Milwaukee I started to save the small offcuts from shop commissions. I did some experiments making a random stack of small offcuts and forge/fire welding them together. Generating a spontaneous shape, I then 'sunk' it to make a small vessel. I save all the small parts and label and store all tool steels and wrought iron. There is an abundance of scrap steel available, such as axles, springs, tyre irons and railhead that can be fashioned into high-quality tools. I utilise scrap for almost all my work and tool making, it is rare for me to buy new steel. Increasing my knowledge of metallurgy and improving my technical skills assists me in becoming more efficient in material use, as well as in the understanding of the properties and uses of various scrap steels. So the more skilled I become, the more I am able to reduce my material footprint. I also think that this repurposing helps to create and inspire others with whom I collaborate, teach and work, to understand the possibilities for reuse. Furthermore, I hope that the honed aesthetic and finish of the work I produce and the high level of quality it displays expresses the value of the material, helping to foster a culture, counter to disposable, consumer paradigms.

Empowerment: Contemporary dilemmas between making and market forces

For me, the act of making, and the learning of skills, embodies a rearrangement of the current social order. If you are born without the possibility of learning skills you are trapped and oppressed, it's a feeling of being a victim because you have no way of

changing your situation or work environment, completely at the whim of the structures around you. In most times and places being without skills to manipulate the physical world meant slavery or death; it was the ultimate in poverty. In contemporary America, most industries have been deskilled. My hometown only existed because of the mining industry, which had collapsed. I grew up in a world where the choices at hand were washing dishes or labouring, uncertain and deskilled factory hand positions were available, but had been streamlined to the point where anyone could do them; as a worker you were disposable in every way. While some women in my community maintained traditions of making, knitting, sewing, cooking and gardening, the men were largely at the mercy of the labour market, and therefore in the post Reagan 1980s at the whim of the shifting sands of global capital and the decisions of Wall Street.

For me the three elements of (i) obtaining and passing on ability through a process of apprenticeship and knowledge exchange (lineage), (ii) the actual literal, physical transmutation of material through learned skill (process), and (iii) the creation of an object in the physical world (outcome), represent in the most literal sense the subversion of current structures and the reclaiming of a place in the world.

With this underlying personal emphasis comes a constant need to investigate and situate the implications of my practice, because 'with knowledge comes power'. The anarchist saying 'ultimate freedom, ultimate responsibility' explains this.

When I was in Memphis, I received from the collections manager at the National Ornamental Metal Museum a small iron forging called quinze, a type of currency, forged by blacksmiths living in Liberia and Sierra Leone. She had received it from sculptor Tom Joyce, who describes the forged currency in the following way:

> The stylized fishtail and bird wing finials on either end of the bar signify the importance and necessity of wealth being shared within the community; able to circulate as freely as birds fly and fish swim. No doubt, the relative fragility of these forgings also alludes to the delicate balance required for each member of the community to thrive (Joyce, in an undated letter that accompanied the gifts of quinze that he handed out to the participants of a talk delivered at a Society of North American Goldsmiths conference).

Traditionally these forgings are given in bundles for trade. These sorts of forgings in a currency sense are stored physical energy, as well as stored material. It is very likely this object was forged from a charcoal basin, a long time ago. This sort of currency had been outlawed during the late 19th and early 20th centuries by European colonisers. What is important to me here is that people made the currency; people used their hand

skills to transform the material, and pass it on. The skills to manipulate the material and its meaning are owned by these people, direct value is being transferred into the object (artefact).

The first place I visited in the USA on my research trip was the Iron Triangle. This strip of land in the heart of Queens is squatted by hundreds of mechanics and scrap merchants. I was told they 'were the best in town', especially if you wanted to get things done that day:

> . . . business bustles against a backdrop of stacked, crumpled cars and a slum landscape. The streets are unpaved and lined with tire-change joints, hubcap purveyors, muffler shops, windshield installers and rim retailers. There are brake and transmission specialists, and auto body garages (Kilgannon 2004).

The Triangle provides a working place for generations of mechanics.

Throughout the world, and with varying degrees of security and safety, people craft a living, using hand skills to transform scrap and waste into useful objects. An example relevant to blacksmithing is on the outskirts of Maroua, Cameroon, the Les Forgerons, where 'specialized skills are gathered here for a single purpose: to transform piles of scrap iron into finely finished tools, stoves, replacement parts and other useful instruments for sale to the local population' (Zimmerman 2010). People travel from far and wide to the village to buy tools and bring loads of scrap. And generations of makers continue their trades, providing their livelihoods through their hand skills. In *The Craftsman,* Richard Sennett (2009) explains:

> History has drawn fault lines dividing practice and theory, technique and expression, craftsman as artist, maker and user; modern society suffers from this historical inheritance. But the past life of craft and craftsmen also suggest ways of using tools, organizing bodily movements, thinking about materials that remain alternative, viable proposals about how to conduct life with skill (p.11).

In the preface to Fukuoka's *The One Straw Revolution* (1978, p.xii) Wendell Berry describes the author's understanding of the interrelationships between practical action, the world around us and philosophy, writing '...we cannot isolate one aspect of life from another. When we change the way we grow our food, we change our food, we change society, we change our values'. I think that the knowledge involved in one activity creates the capacity to do other tasks, and more importantly to be able to understand that you can learn how to do what you want to do. As I wrote in my Honours work in context paper:

> Tony Fry's description of craft is 'a way of being in and with the world . . . a specific

> aesthetic and productive relation to materiality' and 'The articulated relation, between hand [and] mind in making' (Fry 1994, p.97) He sees the value of craft as a basis for ethics, as a fundamental part of life (Fry 1994, pp.99-101). This kind of interconnectivity has connotations for the work at hand and for my relationship with the world around me as well as my actions within it. So it has practical, social, political and philosophical connotations too. Richard Sennett describes craftspeople as 'dedicated to good work for its own sake. Theirs is practical activity, but their labour is not simply a means to another end . . . the craftsman exemplifies the special human condition of being engaged' (Sennett 2008). He goes on to say that according to many studies, 'Competence and engagement [...] appear to be the most solid source of adult self-respect' (Sennett 2008). Writers such as Fry and Sennett place this idea of craft in a contemporary context linking the ideology of the Arts and Crafts movement with contemporary theory and philosophy. I feel that this idea of social consciousness is practiced inherently through my craft. No different to cooking a meal, making a dress or raising a child, it is impossible to separate the practice from the research; the ideas and actions inform one another, they are a web of contingent relations.

The 10th European Academy of Design conference held in Gothenburg in April 2013 was titled 'Crafting the future' and the theme of the conference was designers' practical knowledge: how the specific knowledge of designers can be brought forward, articulated, made visible and be understood and used in contexts like innovation, business development and social change (Crafting The Future, 2013). In a call for practices (rather than papers) conveners from Parsons The New School for Design in New York City ran a series of participatory workshops with the title: 'Power to the people: Practices of empowerment through craft', the subject matter was explained in the following way:

> Over the last decade several projects and exhibitions have explored how crafts can play a central role for empowerment through social development, innovation and entrepreneurship. Yet most often the process and results of these projects have been funnelled through systems that have a deeply disempowering effect on most people, such as the monetary economy, consumer/commodity culture and the global market. To challenge this condition, there is a need to explore how craft practices can act as tools for empowerment by actively resisting or bypassing these subjugating mechanisms. Because the social is currently shaped by our monetary economical system, we must ask: can we imagine a new social paradigm, one rooted in hands-on, participatory activities such as craft, skill sharing and local systems of exchange? ('Power to the People: Practices of Empowerment through Craft' 2013)

I currently live in Tasmania, Australia, an isolated island, a rural place, a build-it-yourself place. This geographical location has put me in touch with building things from scratch, and with very little. I feel this sometimes drives my creative process, using skills to change a material into something else, building tools to do this, showing others my discoveries, and encouraging others to enhance their creative potential. This work

to me is not about prestige, rather it is about making and creativity, both personal and collaborative. For me this DIY ethos is rooted in the craft. Blacksmithing exemplifies a transformative process of a material (essentially earth) into nails, drill bits, hammers, saws, shovels, nuts and bolts. When I visited Steve Fontinini, an Artist Blacksmith in Wyoming, in August 2012 he said that 'blacksmithing is building something from the dirt up'. When we perform this craft we are witnessing something coming from nothing, this could be a tool of trade or an elegant railing or gate, 'this is a low-brow craft that has the potential to do high-brow stuff' (Fontinini, personal interview, August 2012).

The transference of knowledge from one to another, and the transference of knowledge to material outcome, the act of craft, creates an individual and communal power; hand skills unite people, and empower them. It is like a vegetable garden that grows, and provides food, and the skill and knowledge to grow has the potential to feed more. The practice and act is in direct relation to its productivity, potency and nutrition. For 'every vegetable we grow strikes a blow against global capitalism' (Submission Hold 1996). This DIY approach is an inherent aspect of my practice, where there is a power shift to the individual, and this is a major crossover from the industrial trade arena to the one of handcrafts. In Pittsburgh I worked with third-generation ironworkers, whose parents became throwaway workers when the mills closed, due to flows of global capital and the policies of national governments beyond their control, like a drought or a typhoon, a natural disaster. That industrial knowledge has now been passed on and translates into DIY studios, craft and artisan workshops. A desire to make creative work with the skills of the industry has created workshop environments that oppose the disposable attitudes of the mega-industries. In Pittsburgh I had the honour to train apprentices and witness firsthand the effect that educational transference has on another, as I discussed in Chapter Three. Keen and eager makers absorbed the knowledge and have taken their own path of discovery. 'The freedom of a man's mind to celebrate his own feeling by a work of art parallels his social revolt from bondage' (Smith 1950, p.109).

Conclusion

This chapter has followed a well-worn thread of thought in craft. Since the writings of Ruskin and William Morris, and the inception of the use of the term 'craft' to describe

handmade in the first era of industrialisation and mass production, there has been an emphasis in craft discourses on the empowering abilities of craft production for the individual (Cooke 2007, p.2). In contemporary discourse this has broadened to include issues of environmental sustainability and global social ethics and responsibility (Craig n.d.). In the last ten years some craft discourses have also started to deconstruct and question the existence of craft hierarchies, and medium-specific, guild-like craft institutions and exclusive dialogues (Mathews, 2006). Although I am based in a highly skilled approach, I do not seek to isolate or uphold a privileged status or narrow definition in my practice. Accordingly I align with the current resurgence of bottom-up, DIY craft culture, fuelled by horizontally organised online networking and media-sharing as it relates to my practice. Mathews summarises this well:

> Creative citizens respond to a life full of wicked problems by making and remaking their work, not knowing what the precise outcomes will be but feeling the need to perpetually posit critical questions, manifest speculative proposals, and fill in the existing gaps within our inherited systems' (Mathews 2006, p.22).

Conclusion

Through a practice-led methodology my project has been of the here and now; I use methods that have historical connotations, yet are not anachronistic. I see no separation within the creative process between the conception of tools, art or everyday life. This creative and imaginative state of exploration, this practice-based research, celebrates and connects the human with the material world. Suzuki (cited in Koplos &Metcalf 2010) explains how Yanagi Soestu (1889-1961), the author of *The Unknown Craftsman* and founder of the 20th century 'Mingei' or Japanese 'folk art' movement, describes making as 'direct seeing' through intuitive engagement rather than intellectual knowledge, since the latter is always 'about' something and cannot get to the core of seeing. Yanagi Soetsu believed that Mingei went beyond ego and created a 'healthy beauty' of things 'born not made'.

As discussed in Chapter Three, I make this work with technical skill, which the travel and research that I have undertaken over the course of my MFA has reinforced. Sharing and acquiring of skill is a backbone to creativity in my practice. My creative process and compositional vocabulary continue to be a play on technical intelligence and a meshing of life experiences with the creative process, utilising and experimenting with knowledge taught and shared. A colloquial trade saying notes that 'you learn something from five different tradespeople, you become the sixth', while in Dogon mythology, the first blacksmith brought to earth a piece of the sun and the tools and know-how to forge it (Joyce 1998, p.9). Both of these reflections acknowledge the embodiment of learnt behaviours and actions in a discipline such as smithing, and speak of the way knowledge passes through networks and generations of makers. The material culture of making informs an ability to discover in the heat of practice.

Working in smithing with hot metal sets up a time-based and physical relationship with the material, and the ideation of form. When I work it is a feeling of transience, of motion, one thing leading to another in a natural course of events. I am guided by the technical 'knowns', but during the ride through these I am looking for the unknowns. I am looking for relationships, and counter-relationships between members and elements, joins noticing how each human motion is recorded in the steel, in its semi-fluid state. I cut, twist, forge, punch, split, weld and grind, all the while looking for, and being submerged in, an ever-changing and interrelated variety of steel forms.

In Chapter Four, I explained that the basis of blacksmithing is a thorough understanding of the material's malleability when heated, and the resulting potentialities for making work. Additionally, in my practice, knowing the basics of metallurgy gives me a better understanding of the material and what is happening internally and externally while working, so I view the material not just as surface, but also as mass. I consider a thorough and always expanding knowledge of the materiality of my medium as crucial to my practice. I explained to Albert Paley that what influenced me the most about his work was the use of the plastic nature of the material, with an emphasis on 'the paradox' of rigid and soft nature. I have come to understand in the course of my research that this way of understanding the medium is integral to the blacksmith's tradition.

In Chapter Four in the section describing tooling, I outline how an understanding of blacksmithing tools, and the ways they are made, is an important aspect to this art and trade. They are like keys to locks, sometimes to locks I never knew existed. The tools are part of the conception of form. They themselves are forged, and manipulated to suit a specific job. As a blacksmith you are an architect of tools, where the design of known tools allows for the creation of known forms and, just as importantly, experimentation with new tools allows for the creation of new forms.

I am aware in my work that as a contemporary maker/artist I have inherited these skills of the past, with an open mind to what they might achieve and how I can challenge the social problems in front of me. This was the focus of Chapter Five. With skill comes responsibility, with knowledge comes awareness, and so making has repercussions environmentally and socially. Engaging these repercussions is an inherent part of living in the world. Art, craft and design activists respond in many ways to these challenges. Fuad-Luke states that 'Design activism is design thinking, imagination and practice applied knowingly or unknowingly to create a counter-narrative aimed at generating and balancing positive social, institutional, environmental and/or economic change' (Fuad-Luke 2009, p.27). Participating in contemporary society involves more than ever an engagement with the implications of what we do and our effect on the world around us. Conversely as members of a global, and for the first time a predominantly urban society, humanity is thoroughly dependent on and at the mercy of modes of production

and systems of social, economic and political organisation determined ‘from above’ and afar.

So my work comes from a DIY, grassroots place. I don’t subscribe to the clichés of the heroic artistic ego, and I try to approach my practice as just a maker, one with a view of my place in a larger world around me, with consideration of ethics and a relationship with community. Making has always had socio-political connotations for me and it has always been tied up with a consideration of the environmental impact of the materials and fuels, and broader networks of production.

There is a conflict that exists within my work, in the objects - a duality between the industrial and organic nature. This duality is expressed in the composition of the objects; the rise and fall, built and unbuilt, rigid and fluid, movement and rest. There is a dynamic clash of forms as well as celebration. I myself am caught in this paradoxical world of a love and hate relationship that unfolds with the research of the medium, and its historical repercussions, of decaying structures and rebirth. I feel configuring and reconfiguring these relationships has become an essential characteristic of my approach to my work, striving to find a balance between the dichotomies inherent in a globalised world driven by mass consumption.

This work to me is not about prestige, rather it is about making and creativity, both personal and collaborative. For me this DIY ethos is rooted in the craft. Blacksmithing exemplifies a transformative process of a material (essentially earth) into something else. In a comparable way, the transformative implications of making also change me, and participate in broader environmental and social transformations.

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Appendix A: Timeline of Project

The following timeline provides a reference point for the reader of the exegesis. My research project covered a lot of ground, in a specialist area. As such there is a fair amount of very medium specific information. The timeline contains detailed descriptions of the events, studios and institutions visited. It is hoped that this will be used as a reference material by the reader and will provide for a more fluid reading of the exegesis. The body text will be freed up to discuss the project rather than be bogged down in descriptions of the numerous artists, institutions and events visited during the course of the research.

March - April 2011

Studio time

University of Tasmania, SVPA, Inveresk, Launceston, Tasmania, Australia

- Practice as research based studio work.
- Completed forged and fabricated object, *Split Surface Composition.*
- Planned a major research trip, organised tickets, accommodation, and transport.
- Completed XGR501 Introduction to Higher Degree by Research.

8 April - 2 May 2011

Space gallery Pete Mattila Contemporary Steel solo exhibition

s.p.a.c.e. Gallery, Newstead, Launceston, Tasmania, Australia

- Held a solo exhibition.

May 2011

Iron Triangle

Queens, New York, USA.

- Visited the the Iron Triangle, '. . . a 13-block area between Shea Stadium and the Flushing River in Queens, which is the largest single stretch of junkyards in New York City' (Kilgannon 2004). This strip of land in the heart of Queens is squatted by hundreds of mechanics and scrap merchants. I was told they 'were the best in town', especially if you wanted to get things done that day:

> . . . business bustles against a backdrop of stacked, crumpled cars and a slum landscape. The streets are unpaved and lined with tire-change

> joints, hubcap purveyors, muffler shops, windshield installers and rim retailers. There are brake and transmission specialists, and auto body garages. (Kilgannon 2004)

The Triangle provides a working place for generations of mechanics.

May - October 2011

Redstar Ironworks: Collaboration, research and employment

Pittsburgh, Pennsylvania, USA.

- My time here included ongoing involvement in workshop activities such as the adaption of high definition plasma cutting technology to traditional processes, helping problem-solve the working of steel and bronze simultaneously, as well as a range of other opportunities to explore techniques and investigate the adaption and context specific use of both traditional and contemporary processes.
- I also had the opportunity to invent, make and adapt a range of tools for joinery projects and automated cold twisting, this was really inspirational and invaluable in later work.
- Learned to weld Cor-ten steel.
- Participated in architectural ironwork installations.
- Studied Samuel Yellin ironwork, to develop tooling to produce identical iron forms, for restoration work or expansion work. Samuel Yellin is one of the key figures in the decorative blacksmithing movement.
- Taught others how to forge tools, and use specialist power hammer techniques.
- Worked with and trained apprentices.
- Created samples of forgings, for architectural applications.
- Learned to work in a team environment and develop strategies to accomplish tasks that utilise the range of skills the team has.
- The time here really helped to form my opinions and bring to light understandings of my own practice. My understandings of craftsmanship, quality and attention to detail etc.
- I also thought a lot about craft lineage, the passing on and teaching. This has always been a strong strand in my work but only about those who have taught me. At Redstar I was in a position where I was learning

from but also teaching others' this brought to light a lot of insight into how I feel about making and the integrity of processes.

June & July 2011

Pittsburgh Museum of Art

Pittsburgh, Pennsylvania, USA

- 'Hand Made' exhibition, which featured a survey of recent American glass, wood and ceramic art/craft <http://web.cmoa.org/>.

July 2011

Visit and tour of Museums and art galleries.

Washington DC, Delaware, USA

- Viewed Bhutanese and Tibetan ironwork, including traditional chasing and repousse.
- Visited the Smithsonian American Art Museum. <http://www.si.edu/Museums/american-art-museum>
- Visited Hirshorn Museum and Sculpture garden, containing many renowned works including those of Rodin, Chandler, Smith and Warhol. <http://www.si.edu/Museums/hirshhorn-museum-and-sculpture-garden>

June - October 2011

Cathedral of Learning (multiple visits):

Pittsburgh PA, USA

- Visited, studied and documented 'Cathedral of learning', a prominent Arts and Crafts structure, with thousands of examples of the ironwork of the Samuel Yellin workshop <http://en.wikipedia.org/wiki/Cathedral_of_Learning>.

July - August 2011

Can-Iron (The Canadian Artist Blacksmiths Bi-Annual Trade Convention)

Fergus, Ontario, Canada

- http://www.ontarioblacksmiths.ca/CANIRON8/index.html
- Attended four days of intensive workshops, presentations and forge-ins.
- Participated in hands on repousse workshop.

- Documented tools and techniques from English master blacksmith Paul Allen.
- Watched demonstrations about creating blooms of steel then forging them into tools/cutting tools.
- Learned about how to make steel and identify iron from steel.
- Watched demonstrations that were led by master blacksmith Brian Russel; demonstrations included making complex elements using traditional methods, no electricity, very skilled in the processes of fire welding and other forms of traditional joinery.
- Viewed demonstrations from master Damascus and sword maker Jake Powning, who lives and works in an isolated area in New Brunswick, Canada. I watched his workshops and a presentation about his studio, business and practice. We also spoke about the processes he uses and where he draws his own inspiration.

August 2011

Carrie furnace tour:

Pittsburgh, Pennsylvania, USA

- Attended a guided tour of a disused steel mill in Pittsburgh.
- Documented through photographs and sketch the remains of the Carrie furnaces.
- Met ex-workers from the iron furnace/ discussed the place and their thoughts about it. Heard some really interesting stories and opinions about the steel industry and its impact on lives and the environment, as well as about the conditions of work in the plant.
- The furnaces are a significant landmark in Pittsburgh's heritage, and Pittsburgh is a significant landmark in the industrial heritage of North America, and the steel industry worldwide.
- <http://www.riversofsteel.com/>

31 August - 2 September 2011

Visit Albert Paley Studios

Rochester, New York, USA

- Albert Paley is known as one of the most prominent artist-blacksmiths/sculptors in North America. He played a major part in the revival of the craft as an art form. During his career he has researched a forged aesthetic, creating sculpture and decorative arts. He has adapted and evolved those forms into larger scale elements to produce large-scale sculpture.
- Met with Albert Paley, interviewed him about his creative process. Discussed his personal experiences of forging iron and steel for 25 years, and his development of form from those experiences.
- Documented the studio studio, drawings, models, prints and inspiration. The studio is full of drawings ranging in many different scales, and cardboard models cover most surfaces, In the studio there are also glass forms and experiments that are based on the thermal plastic nature of the material. I also interviewed him about these forms and their development.
- Documented the workshop, tools and process that are used to under take the construction of the sculptures. As well as the processes and stages of their decorative art pieces. This entails state of the art steel shaping technology.
- During this visit I was offered an internship at the studio, and confirmed 28 Nov to end Dec 2011.
- http://www.albertpaley.com/

23 - 25 September 2011

SOFA (Southern Ohio Forge and Anvil Association) Quad-state Conference

Troy, Ohio, USA

- Intensive demonstrations, rare tool and book sale,
- Lecture by Albert Paley.
- Forging competitions.
- Historical look at old working machinery.
- Piercing and repousse workshops.
- Power hammer workshops.
- Met with other students who had travelled to Hereford School of Crafts in England for traditional training.

- Met again with Albert Paley, and attended his lecture about his life's work.
- The event is a skill exchange for blacksmiths, as well as an opportunity to learn about and purchase rare machinery and tools that are difficult to obtain.

30 September - 3 October 2011

National Ornamental Metal Museum event 'Repair Days'

Memphis, Tennessee, USA

- Travelled to the National Ornamental Metal Museum, in Memphis Tennessee. 'The Metal Museum is the only institution in the United States devoted exclusively to the advancement of the art and craft of fine metalwork. This is achieved through exhibitions, collections, conservation, restoration and consulting services, classes, internship opportunities, artist residencies and apprenticeships, research and onsite fabrication of artwork and architectural elements.' 'The Metal Museum has become the center for metal arts, a place that actively promotes artists and their work and plays a vital role in the recognition and collection of metal work and the teaching of innovative practices. It is a place that serves an international community of artists and artisans creating work that is steadily building a strong following and important place within the contemporary art dialog' <http://www.metalmuseum.org/>.

- Volunteered for the event 'Repair Days'. 'Each year the Museum hosts Repair Days, a three-day fund-raiser during which volunteer metal smiths from around the country repair metal items to raise money for Museum programs. More than just a fund-raiser, Repair Days serves as an opportunity for emerging and established metal artists from around the world to network and exchange ideas. In addition to hands-on training, there are demonstrations and gallery talks' <http://www.metalmuseum.org/repair_days.html>.
- Participated in the repair of numerous broken steel objects to raise money for the Museum. Some repairs were done in collaboration with other metal artists, had some great opportunities for networking and

building what have proved to be lasting and beneficial relationships. This opportunity allowed me to show my work and discuss my research with a range of key figures in the artistic metalworking community.

- Met the collections Manager/Registrar, Leila Hamdan. She took me on a tour of the unarchived collections. This included work from the 17th to 19th centuries (locks, journeyman tests, boxes etc.) She also gave me a tour of the library, of which only half has been catalogued, I was able to look through the uncatalogued books. The library included all aspects of metalwork, from business journals of major steel producers, to the ironworker's newsletters that contained information about their strikes (wins and losses), the beginning of unionism. Also French industrial revolution machinery flip-out diagram books, to every metal sculptors booklet or catalogue, to the rare copies of German technical books about smithing. It is the most extensive collection of books devoted to artistic metal in the world.
- Met many students from Carbondale Illinois, and Penland North Carolina. These schools are amoung the top craft schools in the U.S and are known for their specialisation in the education of metals.
- I made tools for the iron pour that happens every year at the Museum. Many artists make moulds at the event, to have their work cast in iron.
- Met again with Leila Hamdan to discuss ideas for a research residency.
- Later applied and was accepted for the residency.

31 Oct - 3 Nov 2011

Featured Emerging Artist at the Tasmanian Craft Fair

Deloraine, Tasmania, Australia

- I was invited to feature as the emerging artist at the craft fair, this consisted of an exhibit of my work, video footage and images. I returned from the USA for this week and spent five days communicating with the public about my work. I was humbled to learn that blacksmiths had travelled to see the work around Australia.
- <http://www.tascraftfair.com.au>

November and December 2011

Internship at the Albert Paley Studios

Rochester, New York, USA.

- My time there included ongoing involvement in workshop activities and first hand experience in a large scale sculpture studio.
- Talked to Albert about his creative process.
- Working in the workshop included; grinding, welding, forging elements, stamping, masking off sections to be painted, (assisting workers in undertaking a number of different jobs).
- Helped with production objects, as well as large scale sculpture.
- Learned how Albert works in the shop, about the design process, cardboard models, steel models, and more about metal finishes.
- Worked on a massive sculpture for installation in Hawaii: <http://www.albertpaley.com/portfolio.asp?category=55&title=Projects&intro=true>
- Taking a road trip to see a 200 ton brake press with the foreman of the shop.
- Having experience with new tools and techniques.
- Doing preparation work for Albert to execute forms and final compositions.
- During my time there I was able to interview Albert on a number of occasions, I was picked up and dropped off by him most days giving me time to ask him many different questions.
- Reflection on my own ideas, and creative processes, in relation to Albert Paley's processes.
- Beginning to understand the reasoning behind the designs and their parameters.
- I was given an overview of Albert's life work, where he started and where he is now,
- I interviewed the workers and how they felt about the place and the work.
- Experienced the making and fabrication of new forms.
- The overall experience was an informative experience of the 'Capital A' art world, and interesting in comparison to the more DIY, grassroots approach of myself and others like Redstar.
- Albert's forms originate from 25 years of forging, the forms are ones unique to forged steel, now they are 'hybridized' with cutting edge

technology. Forged forms are now stylised and laser cut out of plate. The forging process is side-stepped, to achieve the form desired by the artist.

- At the studio I also reflected on the broader perspectives of object making, the luxury and privileged aspects of this art.

January - February 2012

One - Month Research Residency, National Ornamental Metal Museum
Memphis, Tennessee, USA

- Access to the largest library in the world exclusively devoted to metalwork.
- Access to workshop space at nights to experiment and make work.
- Meeting and working with other smiths.
- Learning about the origins of the museum.
- Having access to the permeant collection.
- At the museum I learned more about the key figures of the iron renaissance in the USA, and where it is now.
- I studied many aspects of the craft. This included the social implications of the craft, the DIY approach, the industrial background of the of the largest steel producers in the USA.
- I made numerous bubble diagrams, to create links from all these perspectives of the craft to my own practice. The diagrams allowed a non-hierarchical approach to the research. The practice is not a linear one, but rather weaves. I felt that this way of compiling the written research moves well with the practice.
- I was able to make 'Damascus' in the shop under supervision of other smiths; this experience was amazing for me, as I had never actually participated in the process before being here.
- I also visited on numerous occasions the classes that were being taught at a beginner level for blacksmithing.
- The research at the library led to some interesting discoveries: The texts seem to have been published in waves, large amounts of the texts are from the late 60s and early 70s, when craft had its major revival in the states. Prior to this there are numerous texts in the late 30s to 40s, many of them are how-to-books introducing crafts into the home. And where we are now, each

movement is looking back at past knowledges with new eyes and new technologies. Along with all these waves of craft revivals, there are books of industry and it's advancement in the production of steel, as well as books of other cultures and the historical, mystical, spiritual and cultural aspects of the crafting of metal.

- I made a small-scale sculpture in the workshop at night while at the Museum, making work while undertaking text based research has been a very useful to formulate ways to articulate the work.
- My time at the museum gave me a chance to integrate text-based knowledge with hands-on making.

January 2012

Visit to Southern Illinois University, Metals Department

Carbondale, Illinois, USA

- While at the Metal Museum I also took a road trip to Carbondale IL, to help move the travelling exhibition *Iron: Twenty Ten* <http://www.metalmuseum.org/iron2010.html>
- The University of Carbondale is a key institution in the renaissance of the 'artist blacksmith' in the USA.
- Documented the workshop and meet some of the students, as well as instructor Rick Smith.

March - June 2012

Chris Leslie Studio and Workshop

Milwaukee, WI, USA

- Shared a studio and workshop space with a friend and fellow artist blacksmith.
- Much of the work I made at Chris Leslie's workshop I have photographed and left behind, this time was very much about working and experimenting with the techniques and processes I had been exposed to in the previous year. I also perfected and explored a number of processes and experimented with a number of new toolmaking methods that I used in my MFA project. This making time was very valuable in preperation for making my project, kind of like a dress rehearsal.

March - Early July 2012

Scathain

Milwaukee, WI, USA

- <http://www.scathain.com/>
- Part-time contract work for a custom design shop with three areas, a metal shop, a mirror studio and a carpentry shop. I feel that it is very important for my arts practice to keep learning in a workshop environment. My experiences in these environments inform my practice and also keep my metalworking skills current and honed.
- Work at Scathain kept me fresh and helped me not to get stuck in a rut with the making and writing I was doing. One of the most positive things was the social environment at Scathain: Almost all of my co-workers were artists/craftspeople or art students, this gave me plenty of opportunity to discuss what I was working on and get some input, much like an art-school environment. One of my co-workers Katerina Sanerib <http://www.sculpturetrails.com/artists/sanerib/> had just come back from working for prominent metal sculptor/artist John Henry <http://johnhenrysculptor.com/>, and has also lectured in Art at UWM (University of Wisconsin Milwaukee) She is a foundry artist and welder as well and was great to discuss what I was working on with. Other co-workers are sculptors, furniture makers and glass workers.
- Custom fabrication and forging work.
- Exposure to specialised mirror making processes.
- Collaboration with mixed media artisans, woodwork, mirrors and glass and metalwork.
- Working with an industrial design aesthetic.
- Almost all steel and timber was recycled, challenges here to meet design briefs, lots of opportunity to learn new techniques.
- I also had some new opportunities to do design work, meet with clients and quote work. All really useful experiences for my career as a professional artist.
- It was really interesting to be working with a studio that utilises an industrial design aesthetic. It was also really interesting working in such a big shop: There were three areas, a metal shop, a mirror studio and a carpentry shop,

and each had a number of artisans and workers employed in it. I gained a lot of insights, especially technically, about the combining of materials.

June 2012

Visit to Memphis Metal Museum

Memphis, Tennessee, USA

- Two-day trip to the Memphis Metal Museum, Virgil England exhibition, Harlan Butt exhibition and a "tributaries" exhibition of Lauren Kalmans work <http://www.laurenkalman.com/lauren/Portfolio.html>.

June and early July 2012

Housekeeping, organisation, logistics

Milwaukee, WI, USA

- June really comprised of a lot of time spent on organisational and logistical matters, especially regarding a shift of the project and my family between continents. There was a lot of basic housekeeping of the project like backing up electronic and written work, and making sure that other support work I was leaving in the USA was properly documented.
- Pre-conference contacts, making sure that I had contacted and continued to maintain contact with everyone I was interested in meeting at the conference, and that they were familiar with my work. This included setting up meetings, talking about possible post conference visits and possibilities, emailing images, publications and CV etc. This proved to be a really good way to approach the networking opportunities that the conference provided because it was really big and almost everyone was trying to show their work and get their cards out there. I was also fortunate to have had an article about my masters / journeyman project in the preceding issue of *The Anvil's Ring* (the industry magazine).
- Organisation of the trip to the west coast. The combination of cost and opportunities meant that a road trip seemed the best way to do the most in a short period of time. Organisation included: Accommodation, working out my itinerary and route, the dates of visits, the appropriate tooling to take with to each shop, packing, vehicle maintenance, organisation of journals and electronic equipment, backing up my research before the trip.

- Organising move back to Australia included shipping tools, research notes, texts, and family posessions, selling the vehicle. Moving the family back to Australia, accomodation when we got back, children's school, dog's quarantine etc.
- Dropping off the Memphis residency sculpture to be held in the Tom and Una Kohl collection, collectors based in Minoqua Wisconsin and Sarasota Florida.
- Photographing and documenting support work/ experimental work.

July 2012

Artist Blacksmiths Association of North America BI-Annual Conference

Rapid City South Dakota, USA

- <http://www.abana.org/Conferences/2012/2012Conference.shtml>

I attended the entire conference. As an artist who works in steel it was very informative, with a broad range and diversity of demonstrations. There is not room here to describe the conference in detail, demonstrations that I attended included

Claudio and Massimiliano Bottero Demonstration: Caudio and his son Massimiliano live in the Treviso region of northern Italy, Claudio trained under Simone and Toni Benetton and now has a studio practice of his own. He is a master at the Italian method of working steel which focuses on the plasticity of the material. I was invited to help in the Bottero Demonstration along with some of the best up and coming smiths in the USA, students of Carbondale, residents from the Memphis Metal Museum and Penland School of Craft. I also had the opportunity to show my work to Claudio, who gave me very positive feedback and invited me to visit.

Ellen Durkan: Ellen Durrkan is an emerging contemporary artist from Delaware. She describes herself as interested in exploring the human form through its mental and physical interaction to its surroundings. She was the featured artist at the conference. There was an exhibition of her work, both sculpture and drawings and she gave a great presentation. I chatted with Ellen, and was really interested in the correlations for her between drawing and steel work.

Punzo Family Coppersmiths: From Mexico they took scrap copper and turned it into copper vessels. All work was done by hand with very few tools.

Iron Bloom: Lee Sauder, Steve Mankowski, Shel Browder built a furnace on site. The first smelt was on Thursday along with a talk about theory on site. Friday was the second smelt. The first bloom was be transformed in to sculptural piece; the second one was made into steel and forged into an axe.

Jill Thurman: <http://www.bellaironworks.com/> An Art Nouveau ironwork demonstration.

Brian Brazeal and the Young Smiths:
<http://www.youtube.com/watch?v=t_JeuuxERPg&list=UU5Nn5dwrvBlzKYBOivIS5VA>

POMM, the Patient Order of Meticulous Metalsmiths (including Tom Latane): Made a Scandinavian style door with engraved hardware**.**
<http://www.facebook.com/media/set/?set=a.129528067080260.14873.114242105275523&type=3>

July-August 2012

After I returned to Milwaukee from the conference in South Dakota we packed up house, studio and workshop and drove to Los Angeles to fly back to Australia. On the way I visited, worked with and stayed with a number of artists and professional blacksmiths. The following is an overview of these:

July 2012

Studio and workshop visit, Bob Bergman and Nanna Schowalter
Postville, WI, USA

- These working smiths live in a remote area of Southern Wisconsin, near New Glarus; with similar terrain to Tasmania, the hilly and fertile region is famous for its small enterprises, gourmet and organic produce and self-reliance. Bob and Nanna have two very different approaches to this relatively remote lifestyle. Bob runs a very large operation, manufacturing and shipping out custom ironwork on commission for big residences and

businesses as far away as Montana, Florida and the east coast USA. Nanna, on the other hand, also sells her work nationally and is a fully self-supporting artist, she creates small-scale garden sculpture that she sells through craft shows and select galleries, as well as online.

- **Bob Bergman of Postville blacksmith** is from the era of the first wave of the artist blacksmith revival in 1960's USA. He did a journeyman tour in Europe in the 1970s, which is where our common interest lay. Bob runs a very large ironwork shop in southern Wisconsin. It is unique in the shops that I visited in that he does pretty much everything on site. The workshop includes a massive machine shop, sandblasting, painting and finishing booths and areas, as well as a huge blacksmithing and fabrication shop.In addition the workshop encompasses all of the equipment necessary to fix everything in the workshop! This self-reliance goes as far as having a massive furnace that the shop workers cut wood for to heat the workshop in the bitter mid-west winter. The business also specialises in reconditioning industrial blacksmith equipment as well as manufacturing it.
- <http://www.postvilleblacksmith.com/ >

- **Nanna Schowalter** is a sculptor with an MFA from the University of Wisconsin Madison. She utilisees a lot of ancient symbology in her current work in an exploration of contemporary spirituality, and with an interest in the language of communication through form, prior to the written word.
- <http://www.nanaschowalter.com/>

5 August 2012

Steve Fontanini

Jackson Hole, Wyoming, USA,

- Manufacturer of 'Fontanini Anvils' as well as highly regarded professional architectural Blacksmith, and highly skilled traditional tradesman. Steve creates one-off functional commissions and pieces for exhibition. Like Bob Bergman, Steve began blacksmithing in the early days of the USA craft revival. He does a lot of demonstrations and is well known in the blacksmith community.

- <http://www.fontaninianvilandtool.com/http___www.fontaninianvilandtool.com/Welcome.html>

6 - 12 August 2012

Mountain Forge

Truckee, California, USA

- A large architectural ironwork shop serving the Lake Tahoe region in California as well as shipping nationally. I worked with these guys for a week: there were some really skilled smiths here and I also made them some tools. I worked on elements for a railing, attended a spiral staircase installation, as well as worked on other prjoects around the shop. It was interesting to be in a shop that is able to keep a high level of quality in very large scale work.
- <http://www.mtnforge.com/>

12 - 19 August 2012

Residency at the Bondi Studios, as well as visits to numerous other workshops and studios.

Richmond, Oakland, San Rafael, Bay area, California

Bondi Workshops:

The Bondi workshops were the first shop in the United States to use air hammers for sculptural and decorative metalwork. They are absolutely key to the development of blacksmithing as a contemporary artistic medium in the USA. Both Michael and Stephen Bondi spent extended periods in the studio of Toni and Simone Bennetton in Europe, and they were largely responsible for the Italian influence in American artist blacksmithing. Sadly Stephen passed away in 2004. Michael helped to bring Claudio Bottero to the conference this year as well as to teach master classes last year, and he organised the team of smiths from Carbondale, and the Metal Museum for the ABANA conference I attended in South Dakota.

Michael Bondi:

Michael Bondi specialises in large-scale architectural work forging semi-precious metals such as bronze and copper as well as aluminium and of course

steel and stainless steel. He has trained a team of smiths who are really experts in their area, I do not know of anyone else who is forging these metals with this level of skill. I was lucky enough to spend a week at the Bondi workshops being instructed by Gregorio and Felipo in some of these techniques. Mike was also kind enough during the residency to drive me around to meet a whole range of amazing Bay area artists and artisans, some of whom are listed below. This visit was a definite highlight of my trip.

- <http://www.michaelbondi.com/>

Stephen Bondi:

During the residency I was able to view Michael's collection of his brother Stephen's work. Unfortunately I did not have my camera at that time; however, it was great to see the work of such a prominent American smith, one who influenced and advised many of my own early inspirations like Paley and Joyce. Stephen Bondi's work is really interesting on a lot of levels he experimented with a range of forms combining plastics with steel in the 70s. It was great to see this work because it is fairly inaccessible online, and my only exposure to it before has been in books and through word of mouth. I was also able to view some handmade books of the Art Deco Italian ironwork of masters such as Mucattelli and Rizzarda that Stephen Bondi had documented in numerous trips to Italy over the course of his life. Again these images are impossible to access online, so this was a unique opportunity.

An interview with Stephen Bondi is available here:

- <http://www.anvilmag.com/smith/bondi.htm>

Form and Reform, John Sarriugarte:

Blacksmith and fire artist, John Sarriugarte is an iconic maker from the Bay area. He is well known for his work at the Burning Man festivals, and his importance in the 'steam punk' scene. The creative energy at their workshop was amazing, It was a mesh of electronics, metal, fire, wheel, and steam.

- <http://formandreform.com/wordpress/>

Pacassa Studios, Paco Prieto:

I met Paco through Mike Bondi. Paco runs a high end wood-design studio, the studio is based in Oakland, and many other artists and crafts people rent

studios from him, including part of the estate of the late David Ireland, who had a studio there since the 1980s. I was inspired by the space, workshop and living area. They do not have a website.

Jim Austin:
Jim runs a studio that houses other artists such as Dan Hooper. This was a general smith shop.

Jil Thurman workshops:
Jill runs an ironworking business, and also does public sculpture. Her shop was small but was able to take on large jobs, with the use of well-organized outsourcing. She took the time to show me around and I was inspired by her use of space, the scale of her operation and her organisation of outsourcing to take on larger scale work when the opportunity arose.

- <http://www.bellaironworks.com/>

Tim Cisneros workshops:
I have met Tim before at the ABANA conference as well as MTN forge in Trukee, nowadays he mostly does all sculptural work and some custom ironwork. He used to run a large ironworking business in the Bay area but has scaled down to a one-man operation, this scale shift interested me: throughout the year there has been a lot of questions raised about scale in making, both in what is made as well as how the making is achieved, and what speed it is done at. This has also raised questions for me about outsourcing, utilising new technologies, and tooling.

- <http://theforgeworks.com/Welcome.html>

19 August 2012

MAH (Santa Cruz Museum of Art and History) 'Experience Metal' event
Santa Cruz, California, USA

- 'A three-day event showcasing an array of different techniques, methods and forms working with the medium of metal. We are excited to share a wide range of metal working methods including blacksmithing, junk metal art, jewelry crafting, wire art, and welding through a variety of workshops

and demonstrations.**'** <http://www.santacruzmah.org/event/experience-metal-sunday/>

20 August 2012

Boromeo Forge Artisan Metalwork Gallery

Carmel by the Sea, California, USA

- This gallery displays the art of some interesting international and American artists working in forged steel. It is also an outlet for the work of a local metal-shop 'Boromeo Forge' from the Carmel area, and a venue for this shop to gain commission work. A number of Bay area smiths suggested I visit them so I stopped by.

23 August 2012

Hans Duus Blacksmith

Buellton, California, USA

- Hans and Clara Duus run a successful forged steel lighting business. The scale of their operation has been quite large, but has been scaled down in recent years. They took the time to show me around the workshop as well as to view some of the design blueprints: Hans has thousands of beautifully hand drawn original lighting designs. The company takes on large-scale lighting commissions for big developments like Las Vegas casinos, as well as residential and smaller scale commercial jobs and public lighting fixtures.

28 August 2012

Tony Swatton

Burbank, California, USA

- Tony makes props and costumes, and is skilled as a blacksmith and sheet metalworker. He has a really interesting workshop, with a lot of specialist metal forming machinery. His business has very short deadlines as much of his work is for big Hollywood movies, and they need the props yesterday. So it was really interesting to see the methods he uses to produce work very quickly.
- <http://www.swordandstone.com/>

October 2012

Waterside Metal Art Workers

Footscray, Melbourne, Vic, Australia

- Visited and toured the workshops and met the artists at this cooperative.
- <http://watersidemetalart.org/>

1 - 4 November 2012

Tasmanian Craft Fair 2012, Tasmanian Artists Blacksmiths Association (TABA) demonstration

Deloraine, Tasmania, Australia

- This was a four-day-long demonstration funded by the Rotary Club in Deloraine. There were 6 metalworkers demonstrating blacksmithing. We worked in collaboration to make a sculptural bench for the public in Deloraine. This was the first time for a group demonstration at this scale.
- <http://www.tascraftfair.com.au/pages/exhibitions/blacksmith-showcase.php>

1 - 4 November 2012

Artifakt 'A Forged Landscape' exhibition

Deloraine, Tasmania, Australia

- Group exhibition of forged metal objects. Specific to the process of blacksmithing.

5 January 2013

MoMa markets 'Sledge Hammer' demonstration

MONA Berridale, Tasmania, Australia

- I was part of a group demonstration held on stage. This was five blacksmiths working making a free standing sculpture. This was done incollaboration with sound artist Nick Smithies and Brian Ritchie.
- <http://www.momahobart.net.au/2013/01/01/sledge-hammer/>

9 - 11 March 2013

Steamfest demonstration

Sheffield, Tasmania, Australia

- I was invited to be a guest demonstrator. This was with two other working smiths.

December 2012 - May 2013

Inveresk railyards experimentation

Inveresk, Tasmania, Australia

- Had access to the Heritage railyards and used a 10 hundred weight Massey power hammer to forge some large elements for the Masters project. This opportunity has been extremely beneficial.

18 - 21 March 2013,

Waterside international blacksmiths festival

Footscray, Melbourne, Australia

- Participated in a international blacksmithing festival. This included a team of Belgian blacksmiths and metal/blacksmith artist from all over Australia. There were group and individual demonstrations.
- <http://watersidemetalart.org/>

22 May - 3 June

Salamanca Arts Centre, Long Gallery *Bent, Twisted and Upset - Metal that Moves* exhibition

Hobart, Tasmania, Australia

- Major group show, opened by Brian Ritchie, curated by Natalie Holtsbaum.
- <http://www.artguide.com.au/exhibition/metal-that-moves/>

Appendix B: Exhibitions

The following is a list of exhibitions completed during the course of the MFA.

2013: MFA Thesis Exhibition:

'Making & Living in a Post-Industrial Landscape / Time-space'

Academy Gallery, Academy of the Arts, Inveresk, Tasmania, Australia.

2013 Group Exhibitions:

'Metal That Moves'

Long Gallery, Salamanca Arts Centre, Hobart, Tasmania, Australia.

Eskleigh Art Award

Perth, Tasmania, Australia.

2012 Group Exhibitions:

'A Forged Landscape'

Artifakt Gallery, Deloraine, Tasmania, Australia

'Milwaukee Gallery Night and Day'

Rosenblatt Gallery, Milwaukee, WIisconsin USA

Piece for Memphis Displayed in the National Ornamental Metal Museum collection

Memphis Metal Museum, Memphis, Tennessee, USA.

‘Connections’

Scotch Oakburn College, s.p.a.c.e Gallery, Launceston, Tasmania, Australia.

2011 Solo Exhibitions:

Tasmanian Craft Fair Featured Emerging Artist

Deloraine Tasmania, Australia.

‘Pete Mattila, Contemporary Steel; Studies in Surface Composition’

s.p.a.c.e Gallery, Launceston, Tasmania, Australia.

Appendix C: Publications

The following is a list of articles written and published during the course of the MFA. I have included only articles specifically about my work and the project. Photocopies of the most significant articles are included with the Thesis submission.

Catchpole, P 2011, ‘Pete Mattila’, *Tasmanian Life*, September/October, <http://tasmanianlife.com.au/pete-mattila/>

Machen, M 2011, ‘Mattila Forges Ahead as Man of Steel’, *The Examiner*, Saturday, 9 April, p. 41.

McShane, B 2011, ‘Blacksmith heads to the US’, *The Examiner*, Saturday, 30 April, pp. 3 & 37.

Malor, D 2011, 'Material Engagement: Forged Steel Sculpture by Pete Mattila’, *Craft Arts International*, no. 82.

Mattila. P 2011, ‘New Works’, *The Anvil’s Ring*, vol. 40, no. 1, p. 24.

Mattila, P 2012, ‘Building my own journeyman program’, *The Anvil’s Ring*, vol. 40, no. 3, pp. 47-9.

Sanders, P 2011, ‘Meet an Artist Set to make his Mark in Metal’ *The Examiner*, Tuesday 1 November, pp. 1 & 6.

Appendix D: Images

70. Pete Mattila, learning to forge a mass into a billet for toolmaking under the instruction of Lindsay Cole, TAFE Ultimo, Sydney, Australia, 2010.
71. Abe Pardee demonstrating and onlookers, Repair Days, National Ornamental Metal Museum, Memphis Tennessee, USA, October 2011.
72. Iron Pour, Repair Days, National Ornamental Metal Museum, Memphis Tennessee, USA, October 2011.
73. Working with apprentice Geoff Blanchard on site, Red Star Ironworks, Ohio, USA, October 2011.
74. Learning to forge a leaf, Repair Days, National Ornamental Metal Museum, Memphis Tennessee, USA, October 2011.

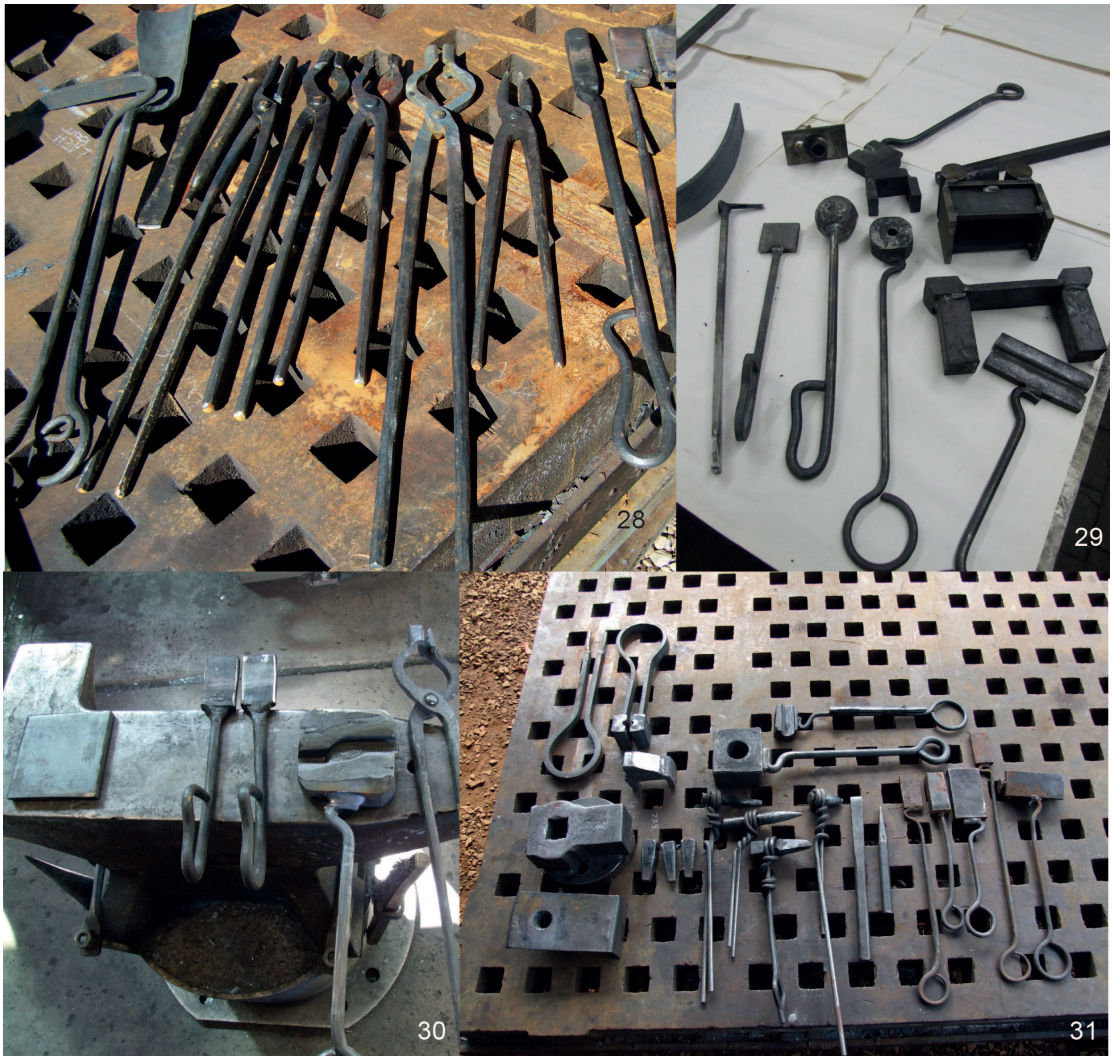
75. Gregorio instructing me (Pete Mattila) on bronze forging techniques, Bondi Metal Design, Richmond California, August 2012.
76. Tool (blacksmiths tongs) making competition and demonstration, Southern Ohio Forge and Anvil (SOFA) Quadstate Conference, Troy, Ohio, USA, September 2011.
77. Tool (blacksmiths tongs) making competition and demonstration, Southern Ohio Forge and Anvil (SOFA) Quadstate Conference, Troy, Ohio, USA, September 2011.
78. Claudio Bottero, demonstration and collaborative making process, 'Reunion on the Great Plains', Artist Blacksmiths Association of North America (ABANA), bi-annual conference, Rapid City, South Dakota, USA, July 2012.
79. Claudio Bottero, demonstration and collaborative making process, 'Reunion on the Great Plains', Artist Blacksmiths Association of North America (ABANA), bi-annual conference, Rapid City, South Dakota, USA, July 2012.

80. Pete Mattila demonstrating forging techniques, image by Richard Martin, Tasmanian Artist Blacksmiths Association (TABA) Demonstration, Deloraine Craft Fair, Deloraine, Tasmania, Australia, November 2012.
81. Pete Mattila and Simon Pankhurst demonstrating forging techniques, image by Richard Martin, Tasmanian Artist Blacksmiths Association (TABA) Demonstration, Deloraine Craft Fair, Deloraine, Tasmania, Australia, November 2012.
82. Pete Mattila and Simon Pankhurst demonstrating layout and composition, image by Richard Martin, Tasmanian Artist Blacksmiths Association (TABA) Demonstration, Deloraine Craft Fair, Deloraine, Tasmania, Australia, November 2012.

83. Parts for a steel making demonstration, ‘Reunion on the Great Plains’, Artist Blacksmiths Association of North America (ABANA), bi-annual conference, Rapid City, South Dakota, USA, July 2012.
84. Steel making demonstration, ‘Reunion on the Great Plains’, Artist Blacksmiths Association of North America (ABANA), bi-annual conference, Rapid City, South Dakota, USA, July 2012.
85. Steel making demonstration, ‘Reunion on the Great Plains’, Artist Blacksmiths Association of North America (ABANA), bi-annual conference, Rapid City, South Dakota, USA, July 2012.
86. Forging the bloom made in the steel making demonstration, ‘Reunion on the Great Plains’, Artist Blacksmiths Association of North America (ABANA), bi-annual conference, Rapid City, South Dakota, USA, July 2012.

87. Interior view of blast furnace at Carrie furnaces, ‘Rivers of Steel’ tour, Rankin, Pennsylvania, USA, August 2011.
88. Derelict structures at Carrie furnaces, ‘Rivers of Steel’ tour, Rankin, Pennsylvania, USA, August 2011.
89. Derelict structures at Carrie furnaces, ‘Rivers of Steel’ tour, Rankin, Pennsylvania, USA, August 2011.
90. Derelict structures at Carrie furnaces, ‘Rivers of Steel’ tour, Rankin, Pennsylvania, USA, August 2011.
91. Exterior view of blast furnace at Carrie furnaces, ‘Rivers of Steel’ tour, Rankin, Pennsylvania, USA, August 2011.

92. Pete Mattila with Albert Paley in front of some of his signature early gates, Albert Paley Studios, Rochester, New York, USA, September 2011.
93. Cardboard Models, Paley Studios, Rochester, New York, USA, September 2011.
94. Albert Paley gates showing use of laser cut forged forms in combination with forged elements, National Ornamental Metal Museum, Memphis Tennessee, USA, October 2011.
95. Paper Drawings, Albert Paley Studios, Rochester, New York, USA, September 2011.
96. Workshop area, Albert Paley Studios, Rochester, New York, USA, September 2011.



97. Tools made by Pete Mattila, Red Star Ironworks, Pittsburgh, Pennsylvania, USA, June 2011.
98. Tools made by Pete Mattila, Scathain, Milwaukee, Wisconsin, USA, March 2012.
99. Tools made by Pete Mattila, Mountain Forge, Truckee, California, USA, August 2012.
100. Tools made by Pete Mattila, Red Star Ironworks, Pittsburgh, Pennsylvania, USA, August 2011.

101. Pete Mattila forging with pneumatic hammer, Red Star Ironworks, Pittsburgh, Pennsylvania, USA, July, 2011.
102. Pete Mattila, grinding edge, Tasmanian College of the Arts (TCotA), University of Tasmania (UTas) Inveresk, Tasmania, Australia, March 2011.
103. Pete Mattila welding on site, Ohio, USA, October 2011.
104. Pete Mattila, forging with pneumatic hammer, Red Star Ironworks, Pittsburgh, Pennsylvania, USA, July 2011.
105. Pete Mattila, forging with pneumatic hammer, Red Star Ironworks, Pittsburgh, Pennsylvania, USA, July 2011.
106. Pete Mattila, forging with pneumatic hammer, Red Star Ironworks, Pittsburgh, Pennsylvania, USA, July 2011.

107. Sunflower mural, Larimer, Pittsburgh, Pennsylvania, USA, June 2011.
108. Pete Mattila forging at the old railyard's blacksmith workshops, Queen Victoria Museum and Art Gallery (QVMAG), Inveresk, Launceston, Tasmania, Australia, November 2012.
109. Sunflowers for cleansing the soil of heavy metals, vacant lot/demolition site, Millvale, Pittsburgh, Pennsylvania, USA, July 2011.
110. Braddock urban farm in foreground, last operating *US Steel* steel mill in Pittsburgh area in background, Braddock, Pennsylvania, USA, September 2011.
111. Crew of Red Star Ironworks outside the workshop, Red Star Ironworks, Millvale, Pittsburgh, Pennsylvania, USA, August 2010.
112. Last operating *US Steel* steel mill in Pittsburgh area, Braddock, Pennsylvania, USA, September 2011.

113. Various artists, some of who went on to form the Pittsburgh Industrial Arts Co-operative (IAC), *Carrie Deer*, 1997, Carrie Furnaces abandoned steel mill, Rankin, Pennsylvania, USA, August 2011.
114. Various artists, some of who went on to form the Pittsburgh Industrial Arts Co-operative (IAC), *Carrie Deer*, 1997, Carrie Furnaces abandoned steel mill, Rankin, Pennsylvania, USA, August 2011.
115. Graffiti, Carrie Furnaces abandoned steel mill, Rankin, Pennsylvania, USA, August 2011.
116. Swoon (AKA Caledonia Dance Curry), unknown title and date, Penn avenue, Garfield, Pittsburgh, Pennsylvania, USA, October 2011.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117. Interior of metal shop, Scathain, Milwaukee, Wisconsin, USA, March 2012.
118. ‘Make Stuff’ graffiti on the workshop wall blackened bricks from Milwaukee’s industrial past, Scathain, Milwaukee, Wisconsin, USA, March 2012.
119. Crew of Scathain, Scathain, Milwaukee, Wisconsin, USA, March 2012.
120. Pete Mattila mirror made from workshop scraps Scathain, Milwaukee, Wisconsin, USA, March 2012.

121. Pete Mattila experiments with workshop scraps, Red Star Ironworks, Millvale, Pittsburgh, Pennsylvania, USA, August 2011.
122. Pete Mattila experiments with workshop scraps, Scathain, Milwaukee, Wisconsin, USA, March / April 2012.
123. Pete Mattila experiments with workshop scraps, Bondi Metal Design, Richmond California, August 2012.
124. Pete Mattila, vessel made from workshop scraps, Scathain, Milwaukee, Wisconsin, USA, March 2012.
125. Pete Mattila experiments with workshop scraps, Scathain, Milwaukee, Wisconsin, USA, March / April 2012.
126. *Quinze*, example of African currency, given to me (Pete Mattila) by Leila Hamdan, National Ornamental Metal Museum, Memphis Tennessee, USA, January 2012.

127. Pete Mattila*, Split Surface Composition*, 2011, Steel, Black Patina, 87x125x119, constructed at Tasmanian College of the Arts (TCotA), University of Tasmania (UTas) Inveresk, Tasmania, Australia, March 2011.


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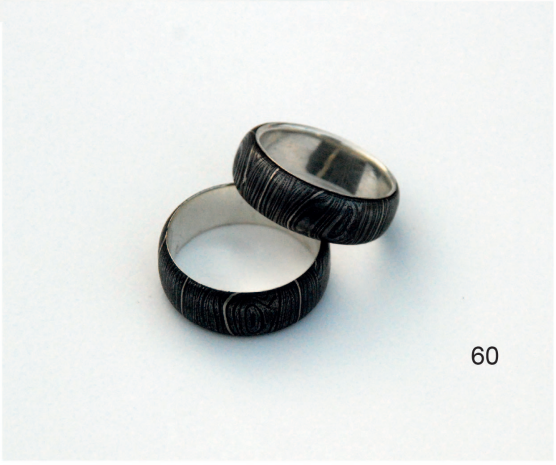
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128. Pete Mattila, *Piece for Memphis*, 2012, Steel, Wax Patina, 560 x 710 x 350, constructed at National Ornamental Metal Museum, Memphis Tennessee, USA, January 2012.
129. Pete Mattila, *Damascus wedding bands*, 2012, Steel, Wax Patina, constructed at National Ornamental Metal Museum, Memphis Tennessee, USA, January 2012.

130. Pete Mattila, Detail: *Piece for Memphis*, 2012, Steel, Wax Patina, 560 x 710 x 350.

131. Pete Mattila, *Lust for the Land*, 2012, Steel, Black Patina, 1300 x 450 x 340, constructed at Tasmanian College of the Arts (TCotA), University of Tasmania (UTas) Inveresk, Tasmania, Australia, November 2012.

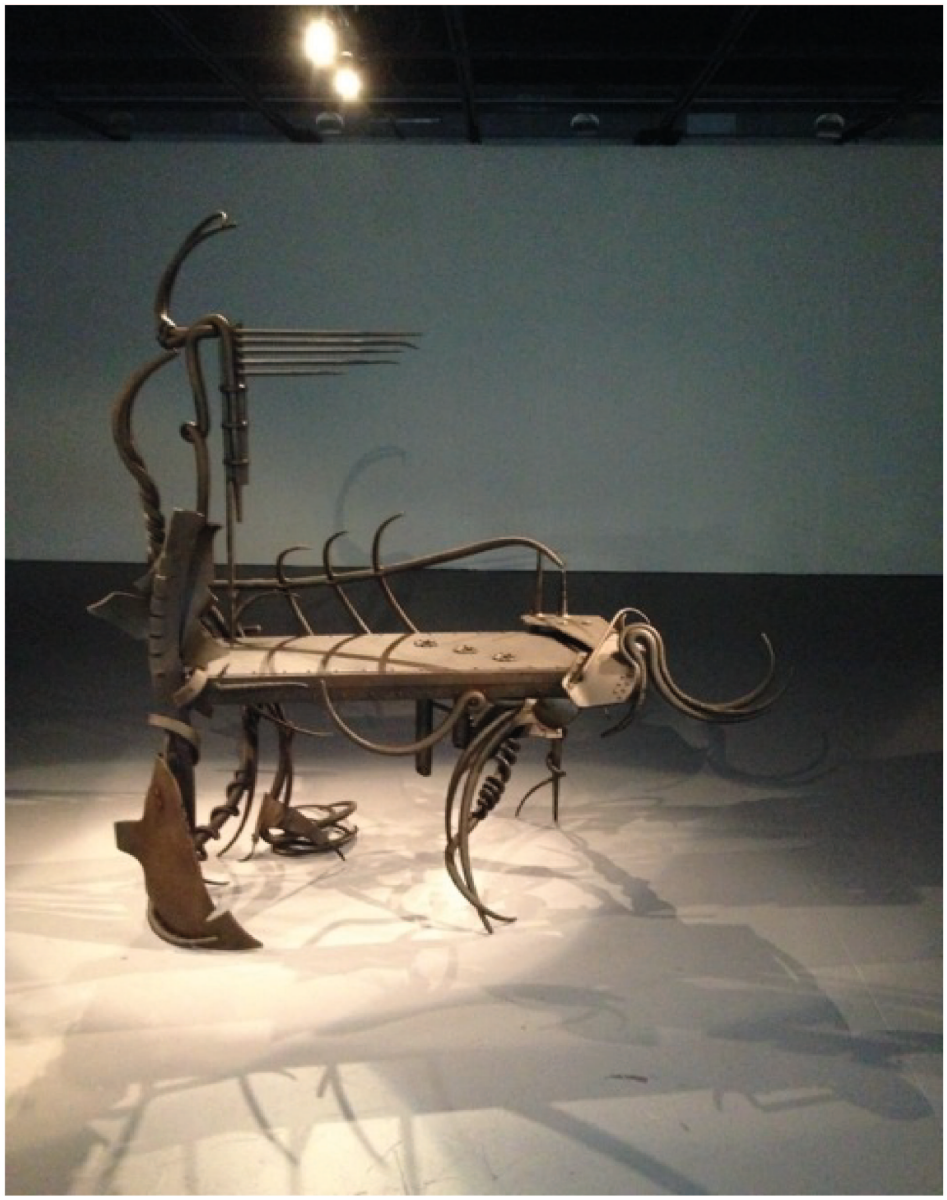
132. Pete Mattila, *Surface Study IV*, 2013, steel, brown and black patina, 1041 x 1701 x 2032, constructed at Tasmanian College of the Arts (TCotA), University of Tasmania (UTas) Inveresk, Tasmania, Australia, November 2012 - April 2013.

133. Pete Mattila, Details of *Surface Study IV*, 2013, steel, brown and black patina, 1041 x 1701 x 2032, constructed at Tasmanian College of the Arts (TCotA) University of Tasmania (UTas) Inveresk, Tasmania, Australia, November 2012 - April 2013.

134. Pete Mattila, *Surface Study V*, 2013, steel, brown and black patina, 1270 x 2108 x 1701, constructed at Tasmanian College of the Arts (TCotA), University of Tasmania (UTas) Inveresk, Tasmania, Australia, November 2012 - April 2013.

135. Pete Mattila, *Surface Study V*, 2013, steel, brown and black patina, 1270 x 2108 x 1701, constructed at Tasmanian College of the Arts (TCotA), University of Tasmania (UTas) Inveresk, Tasmania, Australia, November 2012 - April 2013.

136. MFA assessment presentation 2013 Image 1.



137. MFA assessment presentation 2013 Image 2.

138. MFA assessment presentation 2013 Image 3.